# AIWA®

S/M Code No. 85-011
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# SERVICE MANUAL

## STEREO PREAMPLIFIER

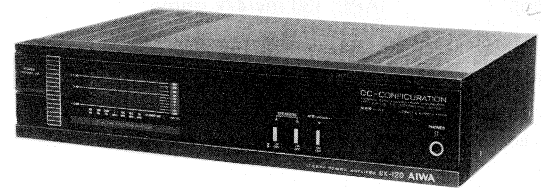
MODEL NO.

# GX-120

## STEREO POWER AMPLIFIER

MODEL NO.

# BX-120

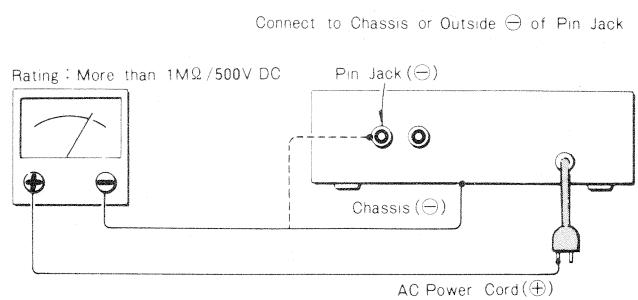


# TYPE. HB, UB, EB, KB, ZB

**Follow the instructions carefully, which will allow the user to optimise the products' performance and give many years of serivce.**

1. **No scratch and melting shall be made to covered lead-wires of an a.c. primary circuit including mains leads.**
2. **No illegibility shall be given to the specification plate, the caution labels, the fuse labels and others.**
3. **When, on pattern sides of circuit boards, additional repair-parts have been made up, the parts shall be firmly glued to circuit boards or other components, unless the parts can be attached firmly.**
4. **The following matters shall be maintained as they are, when repairing.**
   1) Soldering of lead-wire ends
      * Care should be taken of the space distance in an a.c. primary circuit as well as soldering.
   2) Wiring and holding of lead-wires with wire-clips and binders
   3) Materials of lead-wires
      * e.g.; For UL models, lead-wires to be used shall be approved or accepted by the UL.
   4) Location of all kinds of insulators
   5) Setting of voltage selector switch
      * Set the Voltage Selector Switch to 240V, 220V, or 120V, According to your Local Voltage.
5. **After repaired, the insulation resistance or leakage current shall be measured with 500 ± 5V D.C and shall be not less than 1MΩ.**

   Measuring Point




6. **General instructions for mechanism repair**
   1) E-rings and poly slider washers shall be replaced with new ones, if once those have been removed. — No re-utilization due to unreliability.
   2) Regular spare-parts shall always be used for repair, because using irregular parts and tampering with the products shall cause deterioration, mulfunction and damage.

# SPECIFICATIONS

## GX-120

**Total harmonic distortion:**
TUNER, AUX, TAPE PLAY, CD
0.02% (1 kHz)
PHONO (MM)
0.01% (1 kHz, REC OUT)

**Frequency response:** 30 Hz to 50 kHz
(+0.5/−3 dB)

**S/N ratio:** IHF A curve short circuited
GX-120E, H, K, G, U
PHONO (MM) 80 dB
TUNER, AUX, TAPE 83 dB
GX-120Z
PHONO (MM) 76 dB
TUNER, AUX, TAPE 83 dB

**Input jacks (Sensitivity/input impedance):**
PHONO (MM)
3 mV/47k ohms
TUNER
150 mV/47k ohms
CD
320 mV/27k ohms
TAPE
150 mV/47k ohms
AUX
150 mV/47k ohms
MIC
1 mV/10 kOhm

**Output jacks (Level/output impedance):**
TAPE: 130 mV/47k ohms
(REC OUT)
OUTPUT: 1 V/47k ohms

**RIAA deviation:** ±0.5 dB (20 Hz ~ 20 kHz)

- Design and specifications are subject to change without notice.

## BX-120

**Effective output power:** BX-120H
100W+100W (10%, 8 ohms)
BX-120G, E, K, Z
75W+75W (0.009%, 1 kHz, 8 ohms)
<FTC Rule U mode only>
75 Watts per channel, Min. RMS at 8 ohms, from 20 Hz—20 kHz, with no more than 0.02% Total Harmonic Distortion.

**Total harmonic distortion:**
0.01% (50W+50W, 20 Hz—20 kHz, 8 ohms)

**Frequency response:** 10 Hz to 50 kHz (−1 dB)

**S/N ratio:** IHF 110 dB, A curve short circuited

**Input jacks (Sensitivity/input impedance):** BX-120H
1V/47k ohms
BX-120G, E, K, Z, U
800 mV/47k ohms

**Output jacks (Level/output impedance):**
Headphones 1 mW/1 W (8Ω)
Speakers (A or B) 8 to 16 ohms
Speakers (A+B) 16 ohms

**Damping Factor:** More than 30 (8 ohms, 1 kHz)

**Power requirements:** BX-120U
AC 120V, 60 Hz
BX-120G, K
AC 240V, 50/60 Hz
BX-120H
AC 120V/220V/240V switchable, 50/60 Hz
BX-120E, Z
AC 220V, 50/60 Hz

**Power consumption:** BX-120G, E, K, Z
350 W
BX-120U
100 W
BX-120H
118 W

**Dimensions:** 300 (W) × 71 (H) × 200 (D) mm

**Weight:** 4.5 kg

- Design and specifications are subject to change without notice.

# ELECTRICAL MAIN PARTS LIST (GX-120)

- +++ mark denotes a component of assembled part which part code is represented by a previously stated component.
- * -mark means less required items and availabilities may be limited.

CAPACITORS No mark, U, UF: μF P, PF : pF
COILS MMH: mH UH : μH
FUSE MMA:mA



| Ref. No. | Part No. | Description |
|---|---|---|
| === IC === | | |
| | 87-020-291 | IC,BA3812L |
| | 87-027-350 | IC,IR2406G |
| | 87-027-895 | IC,M5218L |
| | 87-027-925 | IC,M5220 |
| | 87-020-145 | IC,M54563 |
| ϟ | 87-020-379 | IC,MN6632 |
| | 87-027-986 | IC,NJM4560 |
| ϟ | 87-027-989 | IC,TC4027BP |
| ϟ | 87-020-039 | IC,TC4051BP |
| ϟ | 87-027-656 | IC,TC4066BP |
| ϟ | 87-027-978 | IC,TC9152P |
| === TRANSISTOR === | | |
| | 89-110-155 | TRANSISTOR,2SA1015,GR |
| | 89-210-670 | TRANSISTOR,2SB1067 |
| | 89-318-155 | TRANSISTOR,2SC1815,GR |
| | 89-320-011 | TRANSISTOR,2SC2001K |
| | 89-309-456 | TRANSISTOR,2SC945L,P |
| | 89-408-804 | TRANSISTOR,2SD880,Y |
| === MAIN CIRCUIT BOARD SECTION === | | |
| PCB-A | * | MAIN CIRCUIT BOARD |
| C3 | * 87-018-036 | CAP,CERA-SOL S 220P |
| C4 | * 87-018-036 | CAP,CERA-SOL S 220P |
| C7 | * 87-018-024 | CAP,CERA-SOL S 47P |
| C8 | * 87-018-024 | CAP,CERA-SOL S 47P |
| C53 | * 87-018-044 | CAP,CERA-SOL S 1000P |
| C63 | * 87-018-035 | CAP,CERA-SOL 180P |
| C64 | * 87-018-035 | CAP,CERA-SOL 180P |
| C71 | * 87-018-044 | CAP,CERA-SOL S 1000P |
| C73 | * 87-018-042 | CAP,CERA-SOL S 680P |
| C201 | * 87-012-110 | CAP,BEAD 270P (Z ONLY) |
| C202 | * 87-012-110 | CAP,BEAD 270P (Z ONLY) |
| C203 | * 87-018-115 | CAP,CERA-SOL 47P (Z ONLY) |
| C204 | * 87-018-115 | CAP,CERA-SOL 47P (Z ONLY) |
| C205 | * 87-018-121 | CAP,CERA-SOL 150P (Z ONLY) |
| C206 | * 87-018-121 | CAP,CERA-SOL 150P (Z ONLY) |
| C207 | * 87-018-121 | CAP,CERA-SOL 150P (Z ONLY) |
| C208 | * 87-018-121 | CAP,CERA-SOL 150P (Z ONLY) |
| C209 | * 87-018-121 | CAP,CERA-SOL 150P (Z ONLY) |
| C210 | * 87-018-121 | CAP,CERA-SOL 150P (Z ONLY) |
| D1 | 87-020-401 | DIODE,1SS176 |
| D2 | 87-020-401 | DIODE,1SS176 |
| D3 | 87-027-225 | DIODE,ZENER 05Z-5.1L(TP) |
| D5 | 87-020-401 | DIODE,1SS176 |
| D6 | 87-020-401 | DIODE,1SS176 |
| D7 | 87-020-401 | DIODE,1SS176 |
| D8 | 87-020-401 | DIODE,1SS176 |
| D9 | 87-020-401 | DIODE,1SS176 |
| D10 | 87-020-401 | DIODE,1SS176 |
| D11 | 87-020-401 | DIODE,1SS176 |
| D12 | 87-020-401 | DIODE,1SS176 |
| D13 | 87-020-401 | DIODE,1SS176 |
| D14 | 87-020-401 | DIODE,1SS176 |
| D15 | 87-020-401 | DIODE,1SS176 |
| D16 | 87-020-401 | DIODE,1SS176 |
| D17 | 87-020-401 | DIODE,1SS176 |
| D18 | 87-027-393 | DIODE,ZENER HZ4C2 |
| D19 | 87-020-401 | DIODE,1SS176 |
| D20 | 87-027-555 | DIODE,ZENER HZ5C2 |
| D21 | 87-020-401 | DIODE,1SS176 |

| Ref. No. | Part No. | Description |
|---|---|---|
| D22 | 87-020-401 | DIODE,1SS176 |
| D23 | 87-027-606 | DIODE,ZENER HZ7C2L |
| D24 | 87-020-401 | DIODE,1SS176 |
| D25 | 87-020-401 | DIODE,1SS176 |
| D26 | 87-020-401 | DIODE,1SS176 |
| D27 | 87-020-401 | DIODE,1SS176 |
| D28 | 87-020-401 | DIODE,1SS176 |
| D29 | 87-027-555 | DIODE,ZENER HZ5C2 |
| D30 | 87-020-401 | DIODE,1SS176 |
| D32 | 87-020-401 | DIODE,1SS176 |
| D33 | 87-020-401 | DIODE,1SS176 |
| D35 | 87-020-401 | DIODE,1SS176 |
| D36 | 87-027-405 | DIODE,ZENER RD2.2EB |
| D37 | 87-020-401 | DIODE,1SS176 |
| D38 | 87-020-401 | DIODE,1SS176 |
| D39 | 87-020-401 | DIODE,1SS176 |
| D40 | 87-027-431 | DIODE,ZENER RD-6.2EB |
| D41 | 87-020-401 | DIODE,1SS176 |
| D42 | 87-020-401 | DIODE,1SS176 |
| D43 | 87-020-401 | DIODE,1SS176 |
| D45 | 87-020-401 | DIODE,1SS176 |
| D51 | 87-027-475 | DIODE,ZENER HZ-6B1 |
| D65 | 87-020-401 | DIODE,1SS176 |
| D66 | 87-027-606 | DIODE,ZENER HZ7C2L |
| D67 | 87-027-475 | DIODE,ZENER HZ-6B1 |
| D68 | 87-020-401 | DIODE,1SS176 |
| D69 | 87-020-401 | DIODE,1SS176 |
| D70 | 87-020-401 | DIODE,1SS176 |
| D71 | 87-027-431 | DIODE,ZENER RD-6.2EB |
| D72 | 87-020-400 | DIODE,1SR35-200 |
| D73 | 87-027-376 | DIODE,1B4B41 |
| D74 | 87-027-393 | DIODE,ZENER HZ4C2 |
| J1 | * 87-049-450 | PIN JACK,4P (PHONO) |
| J2 | +++ | PIN JACK,4P (CD) |
| J3 | * 87-049-420 | PIN JACK 4P-14 (AUX) |
| J4 | +++ | PIN JACK 4P-14 (REC OUT) |
| J5 | 81-739-630 | JACK,ASSY (PLAYER SYNC) |
| J6 | +++ | JACK,ASSY (REC/PLAY) |
| J7 | +++ | JACK,ASSY (CONTROL) |
| J8 | +++ | JACK,ASSY (TUNER) |
| J9 | +++ | JACK,ASSY (CD SYNC) |
| J10 | +++ | JACK,ASSY (VIDEO SYNC) |
| J11 | +++ | JACK,ASSY (OUTPUT) |
| J12 | 82-137-609 | 13P SOCKET (REMOTE CONTROL) |
| J13 | 82-675-661 | JACK 6.3 (HP) (MIX MIC) |
| SW1 | 81-739-640 | PUSH SW 3 (REC OUT) |
| SW2 | +++ | PUSH SW 3 (MUTE) |
| SW5 | +++ | PUSH SW 3 (DSL) |
| VR1 | 87-021-922 | VOLUME 50KW (BALANCE) |
| VR2 | 87-021-921 | VOLUME 10KB (MIC VOLUME) |
| === FRONT CIRCUIT BOARD SECTION === | | |
| PCB-B | 81-740-620 | FRONT CIRCUIT BOARD |
| C141 | * 87-015-696 | CAP,ELECT 2.2-50 |
| C142 | * 87-015-696 | CAP,ELECT 2.2-50 |
| C145 | * 87-015-431 | CAP,AL 0.68-25 |
| C146 | * 87-015-431 | CAP,AL 0.68-25 |
| C155 | * 87-018-040 | CAP,CERA-SOL S 470P |
| C156 | * 87-018-040 | CAP,CERA-SOL S 470P |
| C159 | * 87-018-036 | CAP,CERA-SOL S 220P |
| C160 | * 87-018-036 | CAP,CERA-SOL S 220P |
| C161 | * 87-015-698 | CAP,ELECT 4.7-50 |
| C162 | * 87-015-698 | CAP,ELECT 4.7-50 |
| C169 | * 87-018-032 | CAP,CERA-SOL S 100P |

| Ref. No. | Part No. | Description |
|---|---|---|
| C170 | * 87-018-032 | CAP,CERA-SOL S 100P |
| C171 | * 87-015-679 | CAP,ELECT,33-10 |
| C172 | * 87-015-679 | CAP,ELECT,33-10 |
| C173 | * 87-015-698 | CAP,ELECT 4.7-50 |
| C174 | * 87-015-698 | CAP,ELECT 4.7-50 |
| C175 | * 87-015-691 | CAP,ELECT 0.1-50 |
| C177 | * 87-015-692 | CAP,ELECT 0.22-50V |
| C178 | * 87-015-692 | CAP,ELECT 0.22-50V |
| D34 | * 87-027-889 | LED LN342GP (TAPE) |
| D35 | * 87-027-889 | LED LN342GP (TUNER) |
| D36 | * 87-027-889 | LED LN342GP (AUX) |
| D37 | * 87-027-889 | LED LN342GP (PHONO) |
| D38 | * 87-027-889 | LED LN342GP (CD) |
| D40 | * 87-020-393 | LED,TLR-206RPH (MUTE) |
| D41 | * 87-020-393 | LED,TLR-206RPH (DSL) |
| D42 | * 87-020-393 | LED,TLR-206RPH (GE) |
| D43 | 87-020-401 | DIODE,1SS176 |
| D44 | 87-020-401 | DIODE,1SS176 |
| D45 | 87-020-401 | DIODE,1SS176 |
| D46 | 87-020-401 | DIODE,1SS176 |
| D47 | 87-020-401 | DIODE,1SS176 |
| D80 | * 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D81 | * 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D82 | * 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D83 | * 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D84 | * 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D85 | * 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D86 | * 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D87 | * 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D88 | * 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D89 | * 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| SW10 | 87-031-897 | PUSH SW,SEA (POWER STANDBY/ON) |
| SW15 | 87-031-771 | TACT SW EVQ-QSK04M (VOLUME-UP) |
| SW16 | 87-031-771 | TACT SW EVQ-QSK04M (VOLUME-DOWN) |
| SW17 | 87-031-771 | TACT SW EVQ-QSK04M (TAPE) |
| SW18 | 87-031-771 | TACT SW EVQ-QSK04M (PHONO) |
| SW19 | 87-031-771 | TACT SW EVQ-QSK04M (TUNER) |
| SW20 | 87-031-771 | TACT SW EVQ-QSK04M (AUX) |
| SW21 | 87-031-771 | TACT SW EVQ-QSK04M (CD) |
| VR15 | 87-021-898 | SLIDE VOLUME 100KB (40HZ) |
| VR16 | 87-021-898 | SLIDE VOLUME 100KB (125HZ) |
| VR17 | 87-021-898 | SLIDE VOLUME 100KB (330HZ) |
| VR18 | 87-021-898 | SLIDE VOLUME 100KB (1KHZ) |
| VR19 | 87-021-898 | SLIDE VOLUME 100KB (2.5KHZ) |
| VR20 | 87-021-898 | SLIDE VOLUME 100KB (6.3KHZ) |
| VR21 | 87-021-898 | SLIDE VOLUME 100KB (15KHZ) |
| === POWER CIRCUIT BOARD SECTION === | | |
| PCB-C | * | POWER CIRCUIT BOARD |
| ⚠CR1 | * 87-019-110 | SPARK KILLER 0.01 D |
| ⚠F1 | 87-035-139 | FUSE T2.5A (E,Z ONLY) |
| ⚠J14 | * 87-049-017 | AC OUTLET (H,U ONLY) |
| ⚠J15 | * +++ | AC OUTLET (H,U ONLY) |
| ⚠J14 | * 87-049-416 | AC OUTLET (K ONLY) |
| ⚠J15 | * +++ | AC OUTLET (K ONLY) |
| ⚠J14 | * 87-049-514 | AC OUTLET (E,Z ONLY) |
| ⚠J15 | * +++ | AC OUTLET (E,Z ONLY) |
| === MISCELLANEOUS === | | |
| ⚠ | 87-034-992 | AC CORD (H) (H ONLY) |
| ⚠ | 87-303-578 | AC CORD (U) (U ONLY) |

| Ref. No. | Part No. | Description |
|---|---|---|
| ⚠ | 82-788-674 | AC CORD (E) (E,Z ONLY) |
| ⚠ | 87-034-708 | AC CORD (K) (K ONLY) |
| ⚠ | * 87-085-139 | AC CORD BUSHING D (H,U ONLY) |
| ⚠ | * 87-085-185 | AC CORD BUSHING (E,K,Z ONLY) |
| ⚠SW22 | 87-031-685 | ROTARY SW (VOLTAGE SELECTOR) (H ONLY) |
| ⚠T1 | 81-739-641 | TRANSFORMER P.T (H) (H ONLY) |
| ⚠T1 | 81-731-607 | TRANSFORMER P.T (U) (U ONLY) |
| ⚠T1 | 81-731-608 | TRANSFORMER P.T (E) (E,Z ONLY) |
| ⚠T1 | 81-731-609 | TRANSFORMER P.T (K) (K ONLY) |

| Ref. No. | Part No. |
|---|---|
| === IC === | |
| | 87-020-431 IC |
| ϟ | 87-027-298 IC |
| | 87-020-429 IC |
| | 87-027-895 IC |
| | 87-027-986 IC |
| | 87-020-162 IC |
| ϟ | 87-020-207 IC |
| ϟ | 87-027-656 IC |
| | 87-027-787 IC |
| === TRANSISTOR === | |
| | * 89-503-890 FE |
| | 89-110-155 TR |
| | 89-110-203 TR |
| | 89-111-246 TR |
| | 89-206-882 TR |
| | 89-318-155 TR |
| | 89-318-154 TR |
| | 89-320-011 TR |
| | 89-326-326 TR |
| | 89-326-553 TR |
| | 89-333-810 TR |
| | 89-407-182 TR |
| | 89-412-753 TR |
| | 89-413-023 TR |
| === MAIN CIRCUIT BOARD S | |
| PCB-A | * MA |
| C92 | * 87-018-131 CA |
| C93 | * 87-015-450 CA |
| C171 | * 87-010-276 CA |
| C172 | * 87-010-275 CA |
| C173 | * 87-010-276 CA |
| C174 | * 87-010-275 CA |
| C181 | * 89-663-815 CA |
| C201 | * 87-010-035 CA |
| D25 | 87-020-110 DI |
| D26 | 87-020-110 DI |
| D30 | 87-027-369 DI |
| D31 | 87-020-110 DI |
| D32 | 87-020-110 DI |
| D33 | 87-020-110 DI |
| D34 | 87-020-400 DI |
| D48 | 87-020-400 DI |
| D49 | 87-027-788 DI |
| D51 | 87-020-400 DI |
| D52 | 87-020-400 DI |
| D53 | 87-020-110 DI |
| D54 | 87-020-110 DI |
| D55 | 87-027-097 DI |
| D56 | 87-027-555 DI |
| D57 | 87-027-686 DI |
| D58 | 87-020-110 DI |
| D59 | 87-020-110 DI |
| D60 | 87-020-110 DI |
| D61 | 87-020-110 DI |
| D62 | 87-020-110 DI |
| D63 | 87-020-110 DI |
| D64 | 87-027-479 DI |
| J1 | 81-738-630 JA |
| J3 | +++ JA |

- +++ mark denotes a component of assembled part which part code is represented by a previously stated component.
- ★ -mark means less required items and availabilities may be limited.

CAPACITORS No mark, U, UF: μF P, PF : pF

COILS MMH: mH UH : μH

FUSE MMA:mA

# ELECTRICAL MAIN PARTS LIST (BX-120)

| Ref. No. | Part No. | Description |
|---|---|---|
| D22 | 87-020-401 | DIODE,1SS176 |
| D23 | 87-027-606 | DIODE,ZENER HZ7C2L |
| D24 | 87-020-401 | DIODE,1SS176 |
| D25 | 87-020-401 | DIODE,1SS176 |
| D26 | 87-020-401 | DIODE,1SS176 |
| D27 | 87-020-401 | DIODE,1SS176 |
| D28 | 87-020-401 | DIODE,1SS176 |
| D29 | 87-027-555 | DIODE,ZENER HZ5C2 |
| D30 | 87-020-401 | DIODE,1SS176 |
| D32 | 87-020-401 | DIODE,1SS176 |
| D33 | 87-020-401 | DIODE,1SS176 |
| D35 | 87-020-401 | DIODE,1SS176 |
| D36 | 87-027-405 | DIODE,ZENER RD2.2EB |
| D37 | 87-020-401 | DIODE,1SS176 |
| D38 | 87-020-401 | DIODE,1SS176 |
| D39 | 87-020-401 | DIODE,1SS176 |
| D40 | 87-027-431 | DIODE,ZENER RD-6.2EB |
| D41 | 87-020-401 | DIODE,1SS176 |
| D42 | 87-020-401 | DIODE,1SS176 |
| D43 | 87-020-401 | DIODE,1SS176 |
| D45 | 87-020-401 | DIODE,1SS176 |
| D51 | 87-027-475 | DIODE,ZENER HZ-6B1 |
| D65 | 87-020-401 | DIODE,1SS176 |
| D66 | 87-027-606 | DIODE,ZENER HZ7C2L |
| D67 | 87-027-475 | DIODE,ZENER HZ-6B1 |
| D68 | 87-020-401 | DIODE,1SS176 |
| D69 | 87-020-401 | DIODE,1SS176 |
| D70 | 87-020-401 | DIODE,1SS176 |
| D71 | 87-027-431 | DIODE,ZENER RD-6.2EB |
| D72 | 87-020-400 | DIODE,1SR35-200 |
| D73 | 87-027-376 | DIODE,1B4B41 |
| D74 | 87-027-393 | DIODE,ZENER HZ4C2 |
| J1 | ★ 87-049-450 | PIN JACK,4P (PHONO) |
| J2 | +++ | PIN JACK,4P (CD) |
| J3 | ★ 87-049-420 | PIN JACK 4P-14 (AUX) |
| J4 | +++ | PIN JACK 4P-14 (REC OUT) |
| J5 | 81-739-630 | JACK,ASSY (PLAYER SYNC) |
| J6 | +++ | JACK,ASSY (REC/PLAY) |
| J7 | +++ | JACK,ASSY (CONTROL) |
| J8 | +++ | JACK,ASSY (TUNER) |
| J9 | +++ | JACK,ASSY (CD SYNC) |
| J10 | +++ | JACK,ASSY (VIDEO SYNC) |
| J11 | +++ | JACK,ASSY (OUTPUT) |
| J12 | 82-137-609 | 13P SOCKET (REMOTE CONTROL) |
| J13 | 82-675-661 | JACK 6.3 (HP) (MIX MIC) |
| SW1 | 81-739-640 | PUSH SW 3 (REC OUT) |
| SW2 | +++ | PUSH SW 3 (MUTE) |
| SW5 | +++ | PUSH SW 3 (DSL) |
| VR1 | 87-021-922 | VOLUME 50KW (BALANCE) |
| VR2 | 87-021-921 | VOLUME 10KB (MIC VOLUME) |

=== FRONT CIRCUIT BOARD SECTION ===

| | | |
|---|---|---|
| PCB-B | 81-740-620 | FRONT CIRCUIT BOARD |
| C141 | ★ 87-015-696 | CAP,ELECT 2.2-50 |
| C142 | ★ 87-015-696 | CAP,ELECT 2.2-50 |
| C145 | ★ 87-015-431 | CAP,AL 0.68-25 |
| C146 | ★ 87-015-431 | CAP,AL 0.68-25 |
| C155 | ★ 87-018-040 | CAP,CERA-SOL S 470P |
| C156 | ★ 87-018-040 | CAP,CERA-SOL S 470P |
| C159 | ★ 87-018-036 | CAP,CERA-SOL S 220P |
| C160 | ★ 87-018-036 | CAP,CERA-SOL S 220P |
| C161 | ★ 87-015-698 | CAP,ELECT 4.7-50 |
| C162 | ★ 87-015-698 | CAP,ELECT 4.7-50 |
| C169 | ★ 87-018-032 | CAP,CERA-SOL S 100P |



| Ref. No. | Part No. | Description |
|---|---|---|
| C170 | ★ 87-018-032 | CAP,CERA-SOL S 100P |
| C171 | ★ 87-015-679 | CAP,ELECT,33-10 |
| C172 | ★ 87-015-679 | CAP,ELECT,33-10 |
| C173 | ★ 87-015-698 | CAP,ELECT 4.7-50 |
| C174 | ★ 87-015-698 | CAP,ELECT 4.7-50 |
| C175 | ★ 87-015-691 | CAP,ELECT 0.1-50 |
| C177 | ★ 87-015-692 | CAP,ELECT 0.22-50V |
| C178 | ★ 87-015-692 | CAP,ELECT 0.22-50V |
| D34 | ★ 87-027-889 | LED LN342GP (TAPE) |
| D35 | ★ 87-027-889 | LED LN342GP (TUNER) |
| D36 | ★ 87-027-889 | LED LN342GP (AUX) |
| D37 | ★ 87-027-889 | LED LN342GP (PHONO) |
| D38 | ★ 87-027-889 | LED LN342GP (CD) |
| D40 | ★ 87-020-393 | LED,TLR-206RPH (MUTE) |
| D41 | ★ 87-020-393 | LED,TLR-206RPH (DSL) |
| D42 | ★ 87-020-393 | LED,TLR-206RPH (GE) |
| D43 | 87-020-401 | DIODE,1SS176 |
| D44 | 87-020-401 | DIODE,1SS176 |
| D45 | 87-020-401 | DIODE,1SS176 |
| D46 | 87-020-401 | DIODE,1SS176 |
| D47 | 87-020-401 | DIODE,1SS176 |
| D80 | ★ 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D81 | ★ 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D82 | ★ 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D83 | ★ 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D84 | ★ 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D85 | ★ 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D86 | ★ 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D87 | ★ 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D88 | ★ 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| D89 | ★ 87-020-399 | LED,LN350GPH (VOLUME LEVEL) |
| SW10 | 87-031-897 | PUSH SW,SEA (POWER STANDBY/ON) |
| SW15 | 87-031-771 | TACT SW EVQ-QSK04M (VOLUME-UP) |
| SW16 | 87-031-771 | TACT SW EVQ-QSK04M (VOLUME-DOWN) |
| SW17 | 87-031-771 | TACT SW EVQ-QSK04M (TAPE) |
| SW18 | 87-031-771 | TACT SW EVQ-QSK04M (PHONO) |
| SW19 | 87-031-771 | TACT SW EVQ-QSK04M (TUNER) |
| SW20 | 87-031-771 | TACT SW EVQ-QSK04M (AUX) |
| SW21 | 87-031-771 | TACT SW EVQ-QSK04M (CD) |
| VR15 | 87-021-898 | SLIDE VOLUME 100KB (40HZ) |
| VR16 | 87-021-898 | SLIDE VOLUME 100KB (125HZ) |
| VR17 | 87-021-898 | SLIDE VOLUME 100KB (330HZ) |
| VR18 | 87-021-898 | SLIDE VOLUME 100KB (1KHZ) |
| VR19 | 87-021-898 | SLIDE VOLUME 100KB (2.5KHZ) |
| VR20 | 87-021-898 | SLIDE VOLUME 100KB (6.3KHZ) |
| VR21 | 87-021-898 | SLIDE VOLUME 100KB (15KHZ) |

=== POWER CIRCUIT BOARD SECTION ===

| | | |
|---|---|---|
| PCB-C | ★ | POWER CIRCUIT BOARD |
| ⚠CR1 | ★ 87-019-110 | SPARK KILLER 0.01 D |
| ⚠F1 | 87-035-139 | FUSE T2.5A (E,Z ONLY) |
| ⚠J14 | ★ 87-049-017 | AC OUTLET (H,U ONLY) |
| ⚠J15 | ★ +++ | AC OUTLET (H,U ONLY) |
| ⚠J14 | ★ 87-049-416 | AC OUTLET (K ONLY) |
| ⚠J15 | ★ +++ | AC OUTLET (K ONLY) |
| ⚠J14 | ★ 87-049-514 | AC OUTLET (E,Z ONLY) |
| ⚠J15 | ★ +++ | AC OUTLET (E,Z ONLY) |

=== MISCELLANEOUS ===

| | | |
|---|---|---|
| ⚠ | 87-034-992 | AC CORD (H) (H ONLY) |
| ⚠ | 87-303-578 | AC CORD (U) (U ONLY) |



| Ref. No. | Part No. | Description |
|---|---|---|
| ⚠ | 82-788-674 | AC CORD (E) (E,Z ONLY) |
| ⚠ | 87-034-708 | AC CORD (K) (K ONLY) |
| ⚠ | ★ 87-085-139 | AC CORD BUSHING D (H,U ONLY) |
| ⚠ | ★ 87-085-185 | AC CORD BUSHING (E,K,Z ONLY) |
| ⚠SW22 | 87-031-685 | ROTARY SW (VOLTAGE SELECTOR) (H ONLY) |
| ⚠T1 | 81-739-641 | TRANSFORMER P.T (H) (H ONLY) |
| ⚠T1 | 81-731-607 | TRANSFORMER P.T (U) (U ONLY) |
| ⚠T1 | 81-731-608 | TRANSFORMER P.T (E) (E,Z ONLY) |
| ⚠T1 | 81-731-609 | TRANSFORMER P.T (K) (K ONLY) |

=== IC ===

| | |
|---|---|
| 87-020-431 | IC,BA658 |
| ⚡ 87-027-298 | IC,C-MOS4001 NOR |
| 87-020-429 | IC,LB1290 |
| 87-027-895 | IC,M5218L |
| 87-027-986 | IC,NJM4560 |
| 87-020-162 | IC,STK1070 |
| ⚡ 87-020-207 | IC,TC4022BP |
| ⚡ 87-027-656 | IC,TC4066BP |
| 87-027-787 | IC,UPC1237H |

=== TRANSISTOR ===

| | |
|---|---|
| ★ 89-503-890 | FET 2SK389 |
| 89-110-155 | TRANSISTOR,2SA1015,GR |
| 89-110-203 | TRANSISTOR,2SA1020,O (EXCEPT H) |
| 89-111-246 | TRANSISTOR,2SA1124,R |
| 89-206-882 | TRANSISTOR,2SB688 (EXCEPT H) |
| 89-318-155 | TRANSISTOR,2SC1815,GR |
| 89-318-154 | TRANSISTOR,2SC1815,Y |
| 89-320-011 | TRANSISTOR,2SC2001K |
| 89-326-326 | TRANSISTOR,2SC2632,R |
| 89-326-553 | TRANSISTOR,2SC2655(O) (EXCEPT H) |
| 89-333-810 | TRANSISTOR,2SC3381 |
| 89-407-182 | TRANSISTOR,2SD718 (EXCEPT H) |
| 89-412-753 | TRANSISTOR,2SD1275 |
| 89-413-023 | TRANSISTOR,2SD1302S |

=== MAIN CIRCUIT BOARD SECTION ===

| | | |
|---|---|---|
| PCB-A | ★ | MAIN CIRCUIT BOARD |
| C92 | ★ 87-018-131 | CAP,CERA-SOL SS 1000P |
| C93 | ★ 87-015-450 | CAP,ELECT 220-25V BP |
| C171 | ★ 87-010-276 | CAP,ELECT 56V-5600 |
| C172 | ★ 87-010-275 | CAP,ELECT 56V-8200 |
| C173 | ★ 87-010-276 | CAP,ELECT 56V-5600 |
| C174 | ★ 87-010-275 | CAP,ELECT 56V-8200 |
| C181 | ★ 89-663-815 | CAP,CERA-SOL 0.01UF |
| C201 | ★ 87-010-035 | CAP,ELECT 2.2/50V |
| D25 | 87-020-110 | DIODE,1SS177 |
| D26 | 87-020-110 | DIODE,1SS177 |
| D30 | 87-027-369 | DIODE,ZENER 05Z-6.2L |
| D31 | 87-020-110 | DIODE,1SS177 |
| D32 | 87-020-110 | DIODE,1SS177 |
| D33 | 87-020-110 | DIODE,1SS177 |
| D34 | 87-020-400 | DIODE,1SR35-200 |
| D48 | 87-020-400 | DIODE,1SR35-200 |
| D49 | 87-027-788 | DIODE,D5FB20 |
| D51 | 87-020-400 | DIODE,1SR35-200 |
| D52 | 87-020-400 | DIODE,1SR35-200 |
| D53 | 87-020-110 | DIODE,1SS177 |
| D54 | 87-020-110 | DIODE,1SS177 |
| D55 | 87-027-097 | DIODE,1S1555 |
| D56 | 87-027-555 | DIODE,ZENER HZ5C2 |
| D57 | 87-027-686 | DIODE,ZENER HZ12A1 |
| D58 | 87-020-110 | DIODE,1SS177 |
| D59 | 87-020-110 | DIODE,1SS177 |
| D60 | 87-020-110 | DIODE,1SS177 (EXCEPT H) |
| D61 | 87-020-110 | DIODE,1SS177 (EXCEPT H) |
| D62 | 87-020-110 | DIODE,1SS177 (EXCEPT H) |
| D63 | 87-020-110 | DIODE,1SS177 (EXCEPT H) |
| D64 | 87-027-479 | DIODE,ZENER HZ27-2 (EXCEPT H) |
| J1 | 81-738-630 | JACK PLATE,ASSY (INPUT) |
| J3 | +++ | JACK PLATE,ASSY (SPEAKERS A(L)) |

| Ref. No. | Part No. | Description |
|---|---|---|
| J4 | +++ | JACK PLATE,ASSY (SPEAKERS A(R)) |
| J2 | 87-049-360 | JACK6.3 (PHONES) |
| J5 | * 81-738-631 | SPEAKER-TERMINAL (SPEAKERS B) |
| L1 | * 87-005-158 | INDUCTOR 1UH |
| L2 | * 87-005-158 | INDUCTOR 1UH |
| ⚠R139 | * 87-025-347 | RES,MFO 2W10 (F) |
| ⚠R140 | * 87-025-347 | RES,MFO 2W10 (F) |
| ⚠R223 | * 87-025-348 | RES,NONFLAM 1W270 |
| ⚠R224 | * 87-025-348 | RES,NONFLAM 1W270 |
| ⚠R231 | * 87-025-397 | RES,NONFLAM 1K 2W |
| ⚠R232 | * 87-025-397 | RES,NONFLAM 1K 2W |
| ⚠R301 | * 87-029-383 | RES,FUSIBLE 1W-3.3 |
| ⚠R302 | * 87-029-383 | RES,FUSIBLE 1W-3.3 |
| RY1 | * 87-045-224 | RELAY G2R 24V-2 |
| RY2 | * 87-045-223 | RELAY G4W 24V-2 |
| S1 | 87-031-892 | SW SUL (AFBS(SPEAKER A)) |
| S5 | +++ | SW SUL (SPEAKERS A) |
| S6 | +++ | SW SUL (SPEAKERS B) |
| === FRONT CIRCUIT BOARD SECTION === | | |
| PCB-B | * | FRONT CIRCUIT BOARD |
| C105 | * 87-015-692 | CAP,ELECT 0.22-50 |
| C106 | * 87-015-692 | CAP,ELECT 0.22-50 |
| C107 | * 87-015-696 | CAP,ELECT 2.2-50 |
| C108 | * 87-015-694 | CAP,ELECT 0.47-50V |
| C111 | * 87-015-696 | CAP,ELECT 2.2-50 |
| C112 | * 87-015-694 | CAP,ELECT 0.47-50V |
| C115 | * 87-015-696 | CAP,ELECT 2.2-50 |
| C116 | * 87-015-694 | CAP,ELECT 0.47-50V |
| C119 | * 87-015-696 | CAP,ELECT 2.2-50 |
| C120 | * 87-015-694 | CAP,ELECT 0.47-50V |
| C123 | * 87-015-696 | CAP,ELECT 2.2-50 |
| C124 | * 87-015-694 | CAP,ELECT 0.47-50V |
| C125 | * 87-018-129 | CAP,CERA-SOL 680P |
| C126 | * 87-018-129 | CAP,CERA-SOL 680P |
| C127 | * 87-015-696 | CAP,ELECT 2.2-50 |
| C128 | * 87-015-694 | CAP,ELECT 0.47-50V |
| C129 | * 87-018-124 | CAP,CERA-SOL SS 270P |
| C130 | * 87-018-124 | CAP,CERA-SOL SS 270P |
| C131 | * 87-015-696 | CAP,ELECT 2.2-50 |
| C132 | * 87-015-694 | CAP,ELECT 0.47-50V |
| C133 | * 87-015-696 | CAP,ELECT 2.2-50 |
| C134 | * 87-015-691 | CAP,ELECT 0.1-50 |
| C135 | * 87-015-694 | CAP,ELECT 0.47-50V |
| C137 | * 87-015-690 | CAP,ELECT 22-35V |
| C138 | * 87-015-682 | CAP,ELECT 22-16 |
| C144 | * 87-018-127 | CAP,CERA-SOL SS 470P |
| C146 | * 87-018-130 | CAP,CERA-SOL 820P |
| C147 | * 87-015-691 | CAP,ELECT 0.1-50 |
| C151 | * 87-015-689 | CAP,ELECT 35-10V |
| D35 | 87-020-110 | DIODE,1SS177 |
| D36 | 87-020-110 | DIODE,1SS177 |
| D37 | 87-020-110 | DIODE,1SS177 |
| D38 | 87-020-110 | DIODE,1SS177 |
| D39 | 87-020-110 | DIODE,1SS177 |
| D40 | 87-020-110 | DIODE,1SS177 |
| D41 | 87-020-110 | DIODE,1SS177 |
| D42 | 87-020-110 | DIODE,1SS177 |
| D43 | * 87-020-393 | LED,TLR-206RPH (AFBS(SPEAKER A)) |
| D45 | 87-027-686 | DIODE,ZENER HZ12A1 |
| D46 | 87-020-110 | DIODE 1SS177 |
| D47 | 87-020-110 | DIODE,1SS177 |
| FL | * 81-738-640 | FL,CP1057GR |
| ⚠R229 | * 87-029-390 | RES,FUSIBLE 120 1/4W |

| Ref. No. | Part No. | Description |
|---|---|---|
| ⚠S11 | 87-031-897 | PUSH SW,SEA (POWER STANDBY/ON) |
| === DRIVER-1 CIRCUIT BOARD SECTION === | | |
| PCB-C | * | DRIVER-1 CIRCUIT BOARD |
| C3 | * 87-015-380 | CAP,ELECT BP 4.7-25V |
| C7 | * 87-018-121 | CAP,CERA-SOL SS 150P |
| C9 | * 87-018-124 | CAP,CERA-SOL SS 270P |
| C13 | * 87-018-117 | CAP,CERA-SOL SS 68P |
| C17 | * 87-018-104 | CAP,CERA-SOL SS 10P |
| C19 | * 87-018-099 | CAP,CERA-SOL 3.9P |
| C21 | * 87-018-097 | CAP,CERA-SOL SS 2.2P |
| C25 | * 87-018-129 | CAP,CERA-SOL 680P |
| C35 | * 87-015-691 | CAP,ELECT 0.1-50 |
| C53 | * 87-018-106 | CAP,CERA-SOL SS 15P |
| C59 | * 87-018-123 | CAP,CERA-SOL SS 220P |
| D1 | 87-027-469 | DIODE,ZENER HZ16-2 |
| D3 | 87-020-110 | DIODE,1SS177 |
| D5 | 87-027-469 | DIODE,ZENER HZ16-2 |
| D7 | 87-020-110 | DIODE,1SS177 |
| D15 | 87-027-625 | DIODE,ZENER 05Z-6.8U |
| D17 | 87-027-625 | DIODE,ZENER 05Z-6.8U |
| ⚠R43 | * 87-029-112 | RES,FUSIBLE 1/4W-330 |
| SFR1 | * 87-021-856 | SFR 100 |
| === DRIVER-2 CIRCUIT BOARD SECTION === | | |
| PCB-D | * | DRIVER-2 CIRCUIT BAORD |
| C4 | * 87-015-380 | CAP,ELECT BP 4.7-25V |
| D2 | 87-027-469 | DIODE,ZENER HZ16-2 |
| D4 | 87-020-110 | DIODE 1SS177 |
| D6 | 87-027-469 | DIODE,ZENER HZ16-2 |
| D8 | 87-020-110 | DIODE,1SS177 |
| C8 | *.87-018-121 | CAP,CERA-SOL SS 150P |
| C10 | * 87-018-124 | CAP,CERA-SOL SS 270P |
| C14 | * 87-018-117 | CAP,CERA-SOL SS 68P |
| C18 | * 87-018-104 | CAP,CERA-SOL SS 10P |
| C20 | * 87-018-099 | CAP,CERA-SOL 3.9P |
| C22 | * 87-018-097 | CAP,CERA-SOL SS 2.2P |
| C26 | * 87-018-129 | CAP,CERA-SOL 680P |
| C36 | * 87-015-691 | CAP,ELECT 0.1-50 |
| C54 | * 87-018-106 | CAP,CERA-SOL SS 15P |
| C60 | * 87-018-123 | CAP,CERA-SOL SS 220P |
| D16 | 87-027-625 | DIODE,ZENER,05Z-6.8U |
| D18 | 87-027-625 | DIODE,ZENER 05Z-6.8U |
| ⚠R44 | * 87-029-112 | RES,FUSIBLE 1/4W-330 |
| SFR2 | * 87-021-856 | SFR 100 |
| === FUSE CIRCUIT BOARD SECTION === | | |
| PCB-E | * | FUSE CIRCUIT BOARD (EXCEPT H) |
| | 82-304-743 | 1P TERMINAL (EXCEPT H) |
| ⚠ | 87-033-147 | FUSE CLAMP (EXCEPT H) |
| ⚠F1 | 87-035-313 | FUSE,5A (U ONLY) |
| ⚠F1 | 87-035-190 | FUSE,T2A (E,K,Z ONLY) |
| === FUSE SUB CIRCUIT BOARD SECTION === | | |
| PCB-F | * | FUSE SUB CIRCUIT BOARD (EXCEPT H) |
| D65 | 87-027-185 | DIODE,30D2FA (EXCEPT H) |
| D66 | 87-027-185 | DIODE,30D2FA (EXCEPT H) |
| D67 | 87-027-185 | DIODE,30D2FA (EXCEPT H) |
| D68 | 87-027-185 | DIODE,30D2FA (EXCEPT H) |
| ⚠F3 | 87-035-303 | FUSE,4A (U ONLY) |
| ⚠F3 | 87-035-191 | FUSE,T3.15A (E,K,Z ONLY) |
| ⚠F4 | 87-035-303 | FUSE,4A (U ONLY) |





| Ref. No. | Part No. | Description |
|---|---|---|
| ⚠F4 | 87-035-191 | FUSE,T3.15A (E,K,Z ONLY) |
| === VOLTAGE SELECTOR CIRCUIT BOARD SECTION (H ONLY) === | | |
| PCB-G | * | VOLTAGE SELECTOR CIRCUIT BOARD |
| | 82-304-743 | 1P TERMINAL |
| ⚠ | 87-033-147 | FUSE CLAMP |
| ⚠F1 | 87-035-312 | FUSE, 7A |
| ⚠F2 | 87-035-256 | FUSE,3.15A |
| ⚠S12 | 87-031-685 | ROTARY SWITCH (VOLTAGE SELECTOR) |
| === MISCELLANEOUS === | | |
| ⚠ | * 87-034-578 | AC CORD,U (U ONLY) |
| ⚠ | * 82-788-674 | AC CORD,E50 (E,Z ONLY) |
| ⚠ | * 87-034-708 | AC CORD,K50B (K ONLY) |
| ⚠ | * 87-085-184 | AC CORD BUSHING,D (H,U ONLY) |
| ⚠ | * 87-085-185 | AC CORD BUSHING (E,K,Z ONLY) |
| ⚠T1 | * 81-738-606 | TRANSFORMER PT,H (H ONLY) |
| ⚠T1 | * 81-738-607 | TRANSFORMER PT,U (U ONLY) |
| ⚠T1 | * 81-738-608 | TRANSFORMER PT,E (E,Z ONLY) |
| ⚠T1 | * 81-738-609 | TRANSFORMER PT,K (K ONLY) |

**Note; Combination Circuit Board**

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary,please order the entire circuit board.

**[GX-120]**

**Combination circuit board 81-729-610**
**PCB-A 81-739-611**
**PCB-B 81-739-612**

**[BX-120]**

**Combination circuit board 81-738-610**
**PCB-A 81-738-611**
**PCB-B 81-738-612**
**PCB-C 81-738-613**
**PCB-D 81-738-614**
**PCB-E 81-738-616 (EXCEPT H)**
**PCB-F 81-738-617 (EXCEPT H)**
**PCB-G 81-738-618 (H ONLY)**



**C-MOS IC handling precaution**

The C-MOS IC's construction makes this part susceptible to damage by static electricity and so take sufficient care in regard to following articles.

1. Need to be put on conductive sheet, to be put in a metallic box and to be wrapped by aluminium foil for transportation and deposit.
2. To use solder iron less than 40W (less than 260℃) of power consumption for soldering. But do not overheat more than 10 second.
3. Do not perform a conductivity test with a tester, etc. Refer to the circuit voltages of each part.
4. The ICs on the electrical parts which are indicated by an C-MOS IC symbol mark ( ⏚ ).

⚠ Safety component symbol

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

| Description | Ref. No. | Part No. | Description |
|---|---|---|---|
| (SPEAKERS A(R)) | ⚠S11 | 87-031-897 | PUSH SW,SEA (POWER STANDBY/ON) |
| L (SPEAKERS B) | | | |
| | | | === DRIVER-1 CIRCUIT BOARD SECTION === |
| | PCB-C | * | DRIVER-1 CIRCUIT BOARD |
| | C3 | * 87-015-380 | CAP,ELECT BP 4.7-25V |
| | C7 | * 87-018-121 | CAP,CERA-SOL SS 150P |
| 70 | C9 | * 87-018-124 | CAP,CERA-SOL SS 270P |
| 70 | C13 | * 87-018-117 | CAP,CERA-SOL SS 68P |
| 2W | C17 | * 87-018-104 | CAP,CERA-SOL SS 10P |
| 2W | C19 | * 87-018-099 | CAP,CERA-SOL 3.9P |
| 3.3 | C21 | * 87-018-097 | CAP,CERA-SOL SS 2.2P |
| 3.3 | C25 | * 87-018-129 | CAP,CERA-SOL 680P |
| | C35 | * 87-015-691 | CAP,ELECT 0.1-50 |
| | C53 | * 87-018-106 | CAP,CERA-SOL SS 15P |
| EAKER A)) | C59 | * 87-018-123 | CAP,CERA-SOL SS 220P |
| S A) | D1 | 87-027-469 | DIODE,ZENER HZ16-2 |
| S B) | D3 | 87-020-110 | DIODE,1SS177 |
| | D5 | 87-027-469 | DIODE,ZENER HZ16-2 |
| | D7 | 87-020-110 | DIODE,1SS177 |
| | D15 | 87-027-625 | DIODE,ZENER 05Z-6.8U |
| OARD | D17 | 87-027-625 | DIODE,ZENER 05Z-6.8U |
| 50 | ⚠R43 | * 87-029-112 | RES,FUSIBLE 1/4W-330 |
| 50 | SFR1 | * 87-021-856 | SFR 100 |
| 0 | | | |
| 50V | | | === DRIVER-2 CIRCUIT BOARD SECTION === |
| 0 | | | |
| 50V | PCB-D | * | DRIVER-2 CIRCUIT BAORD |
| 0 | C4 | * 87-015-380 | CAP,ELECT BP 4.7-25V |
| | D2 | 87-027-469 | DIODE,ZENER HZ16-2 |
| 50V | D4 | 87-020-110 | DIODE 1SS177 |
| | D6 | 87-027-469 | DIODE,ZENER HZ16-2 |
| 0 | D8 | 87-020-110 | DIODE,1SS177 |
| 50V | C8 | * 87-018-121 | CAP,CERA-SOL SS 150P |
| 0P | C10 | * 87-018-124 | CAP,CERA-SOL SS 270P |
| 0P | | | |
| 0 | C14 | * 87-018-117 | CAP,CERA-SOL SS 68P |
| | C18 | * 87-018-104 | CAP,CERA-SOL SS 10P |
| 50V | C20 | * 87-018-099 | CAP,CERA-SOL 3.9P |
| 270P | C22 | * 87-018-097 | CAP,CERA-SOL SS 2.2P |
| 270P | C26 | * 87-018-129 | CAP,CERA-SOL 680P |
| 0 | C36 | * 87-015-691 | CAP,ELECT 0.1-50 |
| | C54 | * 87-018-106 | CAP,CERA-SOL SS 15P |
| 50V | C60 | * 87-018-123 | CAP,CERA-SOL SS 220P |
| 0 | | | |
| 0 | D16 | 87-027-625 | DIODE,ZENER,05Z-6.8U |
| 50V | D18 | 87-027-625 | DIODE,ZENER 05Z-6.8U |
| | ⚠R44 | * 87-029-112 | RES,FUSIBLE 1/4W-330 |
| | SFR2 | * 87-021-856 | SFR 100 |
| 470P | | | |
| 0P | | | === FUSE CIRCUIT BOARD SECTION === |
| 0 | | | |
| | PCB-E | * | FUSE CIRCUIT BOARD (EXCEPT H) |
| | | 82-304-743 | 1P TERMINAL (EXCEPT H) |
| | ⚠ | 87-033-147 | FUSE CLAMP (EXCEPT H) |
| | ⚠F1 | 87-035-313 | FUSE,5A (U ONLY) |
| | ⚠F1 | 87-035-190 | FUSE,T2A (E,K,Z ONLY) |
| | | | === FUSE SUB CIRCUIT BOARD SECTION === |
| | PCB-F | * | FUSE SUB CIRCUIT BOARD (EXCEPT H) |
| AFBS(SPEAKER A)) | D65 | 87-027-185 | DIODE,30D2FA (EXCEPT H) |
| A1 | D66 | 87-027-185 | DIODE,30D2FA (EXCEPT H) |
| | D67 | 87-027-185 | DIODE,30D2FA (EXCEPT H) |
| | D68 | 87-027-185 | DIODE,30D2FA (EXCEPT H) |
| | ⚠F3 | 87-035-303 | FUSE,4A (U ONLY) |
| 1/4W | ⚠F3 | 87-035-191 | FUSE,T3.15A (E,K,Z ONLY) |
| | ⚠F4 | 87-035-303 | FUSE,4A (U ONLY) |

| Ref. No. | Part No. | Description |
|---|---|---|
| ⚠F4 | 87-035-191 | FUSE,T3.15A (E,K,Z ONLY) |
| | | === VOLTAGE SELECTOR CIRCUIT BOARD SECTION (H ONLY) === |
| PCB-G | * | VOLTAGE SELECTOR CIRCUIT BOARD |
| | 82-304-743 | 1P TERMINAL |
| ⚠ | 87-033-147 | FUSE CLAMP |
| ⚠F1 | 87-035-312 | FUSE, 7A |
| ⚠F2 | 87-035-256 | FUSE,3.15A |
| ⚠S12 | 87-031-685 | ROTARY SWITCH (VOLTAGE SELECTOR) |
| | | === MISCELLANEOUS === |
| ⚠ | * 87-034-578 | AC CORD,U (U ONLY) |
| ⚠ | * 82-788-674 | AC CORD,E50 (E,Z ONLY) |
| ⚠ | * 87-034-708 | AC CORD,K50B (K ONLY) |
| ⚠ | * 87-085-184 | AC CORD BUSHING,D (H,U ONLY) |
| ⚠ | * 87-085-185 | AC CORD BUSHING (E,K,Z ONLY) |
| ⚠T1 | * 81-738-606 | TRANSFORMER PT,H (H ONLY) |
| ⚠T1 | * 81-738-607 | TRANSFORMER PT,U (U ONLY) |
| ⚠T1 | * 81-738-608 | TRANSFORMER PT,E (E,Z ONLY) |
| ⚠T1 | * 81-738-609 | TRANSFORMER PT,K (K ONLY) |

**Note; Combination Circuit Board**

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary,please order the entire circuit board.

**[GX-120]**

**Combination circuit board 81-729-610**
**PCB-A 81-739-611**
**PCB-B 81-739-612**

**[BX-120]**

**Combination circuit board 81-738-610**
**PCB-A 81-738-611**
**PCB-B 81-738-612**
**PCB-C 81-738-613**
**PCB-D 81-738-614**
**PCB-E 81-738-616 (EXCEPT H)**
**PCB-F 81-738-617 (EXCEPT H)**
**PCB-G 81-738-618 (H ONLY)**

**C-MOS IC handling precaution**

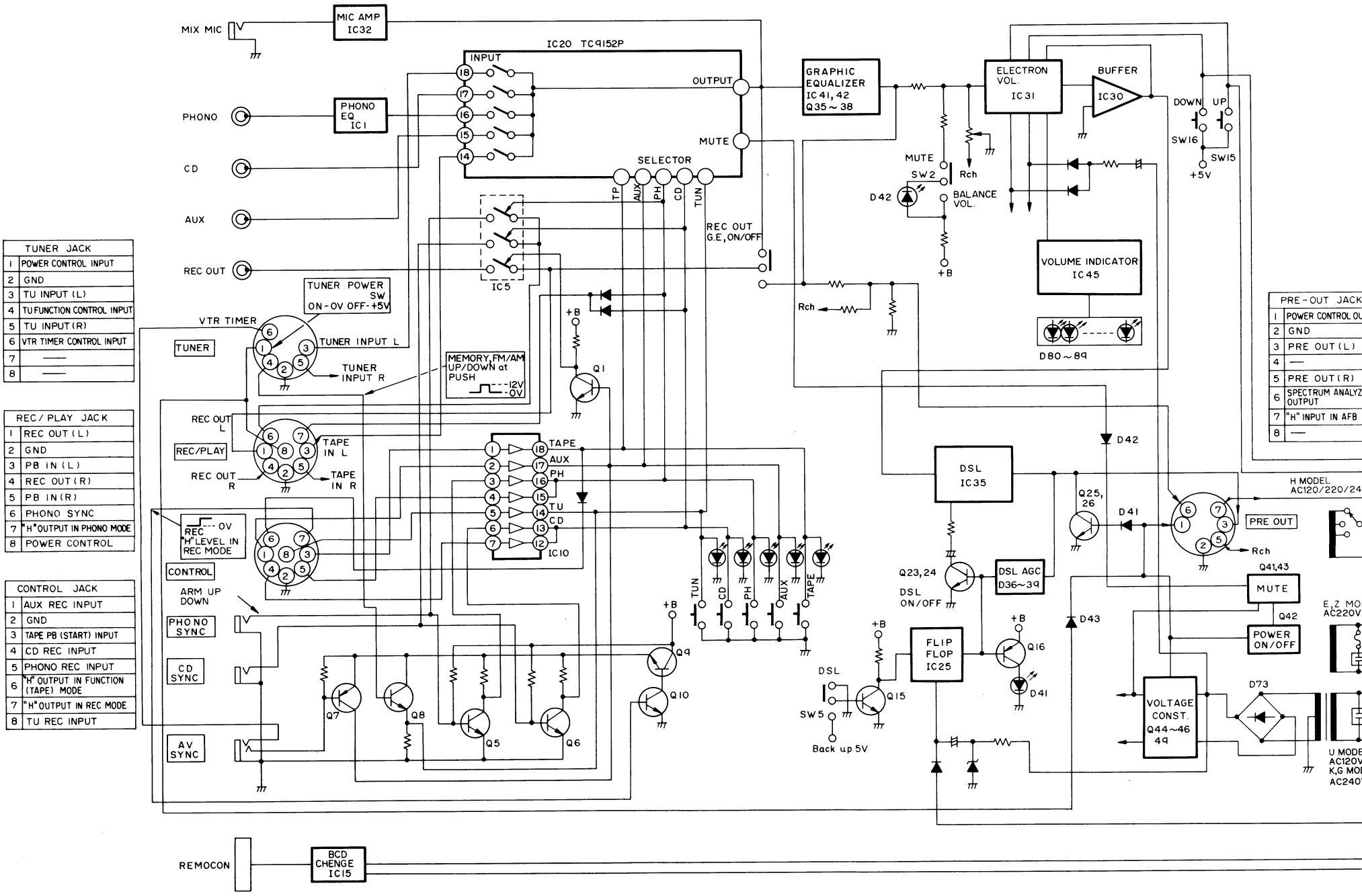
The C-MOS IC's construction makes this part susceptible to damage by static electricity and so take sufficient care in regard to following articles.

1. Need to be put on conductive sheet, to be put in a metallic box and to be wrapped by aluminium foil for transportation and deposit.
2. To use solder iron less than 40W (less than 260℃) of power consumption for soldering. But do not overheat more than 10 second.
3. Do not perform a conductivity test with a tester, etc. Refer to the circuit voltages of each part.
4. The ICs on the electrical parts which are indicated by an C-MOS IC symbol mark ( ⚡ ).

⚠ Safety component symbol

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

# BLOCK DIAGRAM (GX-120)



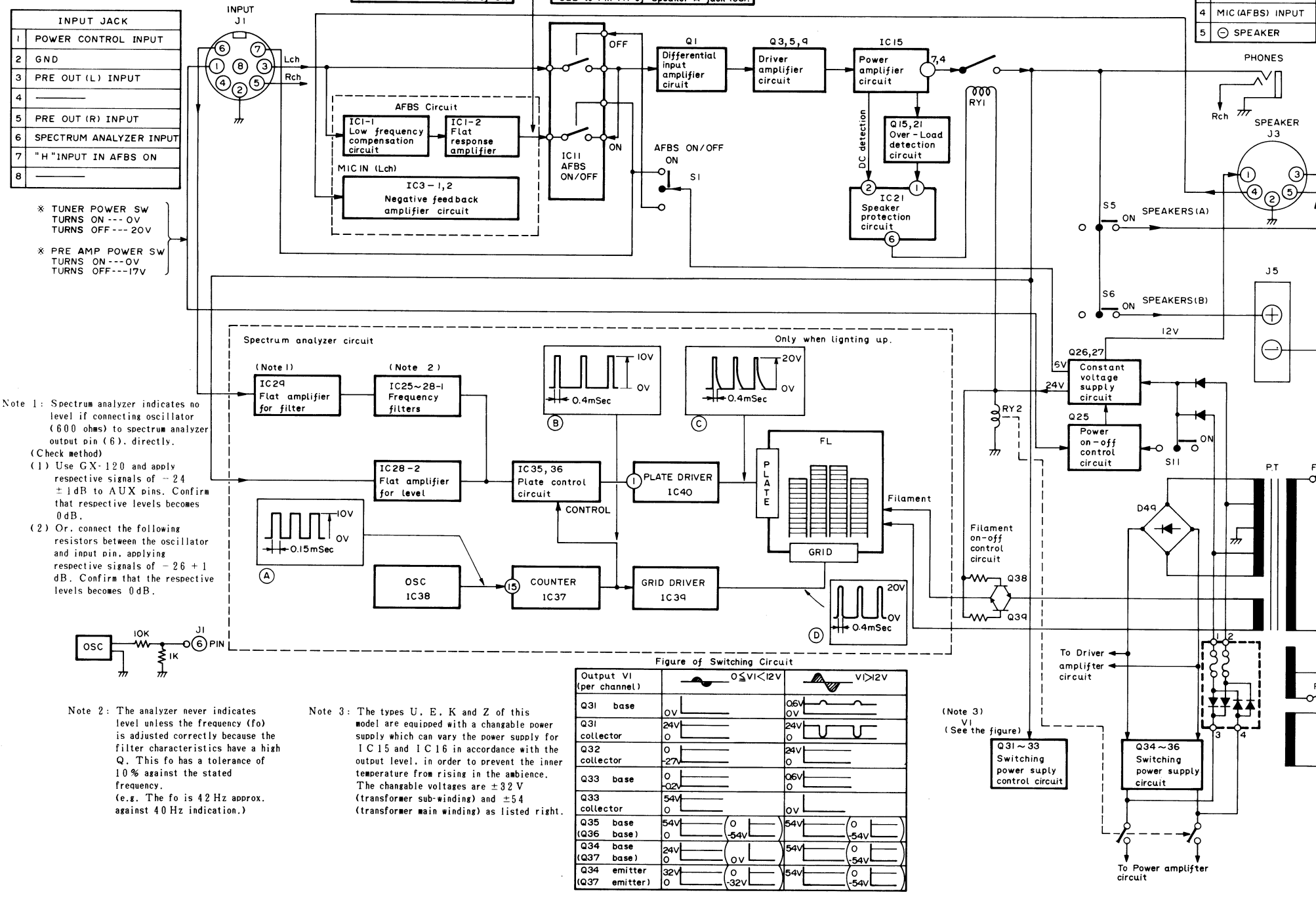

| TUNER JACK | |
|---|---|
| 1 | POWER CONTROL INPUT |
| 2 | GND |
| 3 | TU INPUT (L) |
| 4 | TU FUNCTION CONTROL INPUT |
| 5 | TU INPUT (R) |
| 6 | VTR TIMER CONTROL INPUT |
| 7 | —— |
| 8 | —— |

| REC / PLAY JACK | |
|---|---|
| 1 | REC OUT (L) |
| 2 | GND |
| 3 | PB IN (L) |
| 4 | REC OUT (R) |
| 5 | PB IN (R) |
| 6 | PHONO SYNC |
| 7 | "H" OUTPUT IN PHONO MODE |
| 8 | POWER CONTROL |

| CONTROL JACK | |
|---|---|
| 1 | AUX REC INPUT |
| 2 | GND |
| 3 | TAPE PB (START) INPUT |
| 4 | CD REC INPUT |
| 5 | PHONO REC INPUT |
| 6 | "H" OUTPUT IN FUNCTION (TAPE) MODE |
| 7 | "H" OUTPUT IN REC MODE |
| 8 | TU REC INPUT |

| PRE-OUT JACK | |
|---|---|
| 1 | POWER CONTROL OU |
| 2 | GND |
| 3 | PRE OUT (L) |
| 4 | —— |
| 5 | PRE OUT (R) |
| 6 | SPECTRUM ANALYZ OUTPUT |
| 7 | "H" INPUT IN AFB |
| 8 | —— |

# BLOCK DIAGRAM (BX-120)




| INPUT JACK | |
|---|---|
| 1 | POWER CONTROL INPUT |
| 2 | GND |
| 3 | PRE OUT (L) INPUT |
| 4 | —— |
| 5 | PRE OUT (R) INPUT |
| 6 | SPECTRUM ANALYZER INPUT |
| 7 | "H" INPUT IN AFBS ON |
| 8 | —— |

| SPEAKER JACK | |
|---|---|
| 1 | POWER OUTPUT |
| 2 | GND |
| 3 | ⊕ SPEAKER |
| 4 | MIC (AFBS) INPUT |
| 5 | ⊖ SPEAKER |

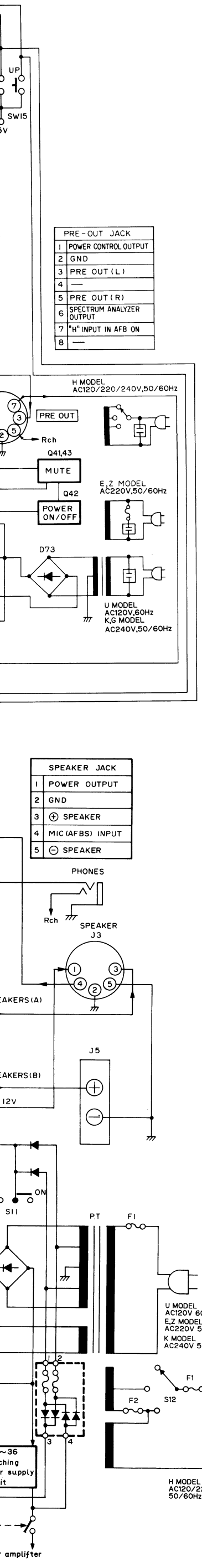
Note 1: Spectrum analyzer indicates no level if connecting oscillator (600 ohms) to spectrum analyzer output pin (6), directly.
(Check method)
(1) Use GX-120 and apply respective signals of −24 ±1dB to AUX pins. Confirm that respective levels becomes 0dB.
(2) Or, connect the following resistors between the oscillator and input pin, applying respective signals of −26 +1 dB. Confirm that the respective levels becomes 0dB.

Note 2: The analyzer never indicates level unless the frequency (fo) is adjusted correctly because the filter characteristics have a high Q. This fo has a tolerance of 10% against the stated frequency.
(e.g. The fo is 42 Hz approx. against 40 Hz indication.)

Note 3: The types U, E, K and Z of this model are equipped with a changable power supply which can vary the power supply for IC15 and IC16 in accordance with the output level, in order to prevent the inner temperature from rising in the ambience. The changable voltages are ±32V (transformer sub-winding) and ±54 (transformer main winding) as listed right.

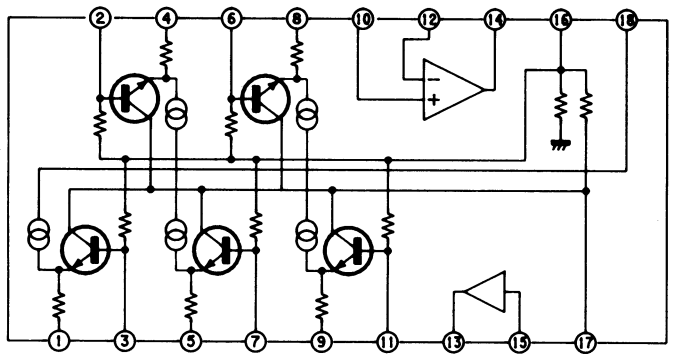
Figure of Switching Circuit

| Output VI (per channel) | 0≦VI<12V | VI>12V |
|---|---|---|
| Q31 base | 0V | 0.6V 0V |
| Q31 collector | 24V 0 | 24V 0 |
| Q32 collector | 0 -27V | 24V 0 |
| Q33 base | 0 -0.2V | 0.6V 0 |
| Q33 collector | 54V 0 | 0V |
| Q35 base (Q36 base) | 54V 0 -54V | 54V 0 -54V |
| Q34 base (Q37 base) | 24V 0 0V | 54V 0 -54V |
| Q34 emitter (Q37 emitter) | 32V 0 -32V | 54V 0 -54V |

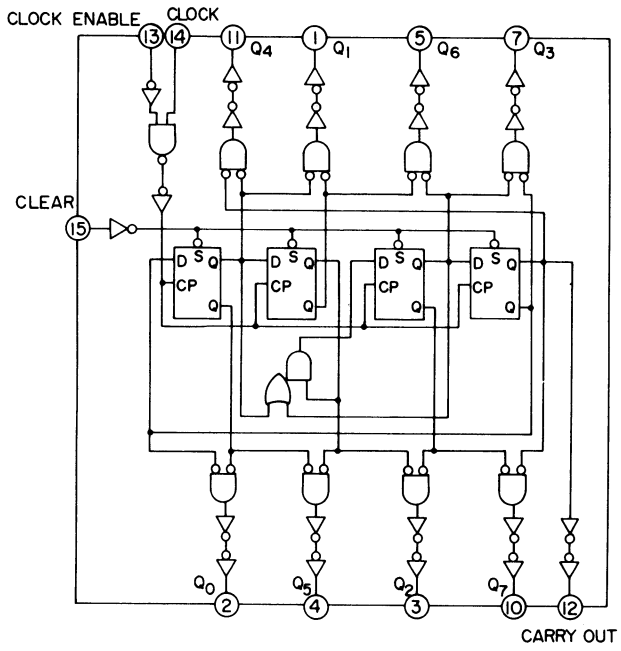



## IC BLOCK DIAGRAM

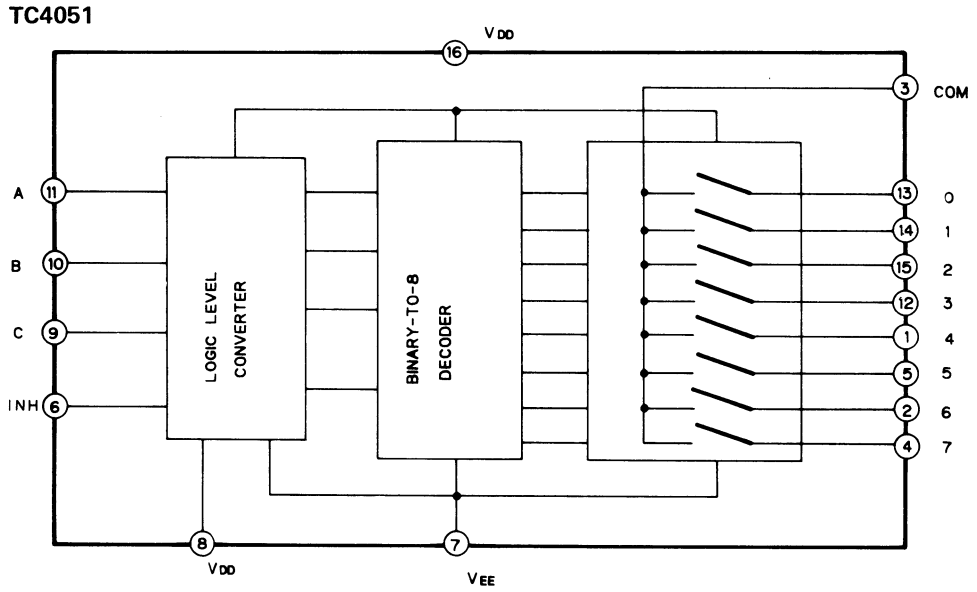
### BA3812L



### TC4022BP




### TC4051




TRUTH TABLE

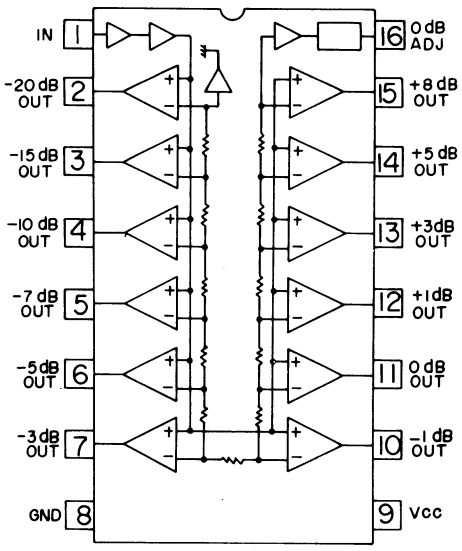
| CONTROL INPUTS | | | | "ON" CHANNEL |
|---|---|---|---|---|
| INHIBIT | C | B | A | |
| L | L | L | L | 0 |
| L | L | L | H | 1 |
| L | L | H | L | 2 |
| L | L | H | H | 3 |
| L | H | L | L | 4 |
| L | H | L | H | 5 |
| L | H | H | L | 6 |
| L | H | H | H | 7 |
| H | ※ | ※ | ※ | NOTE |

※ Don't Care

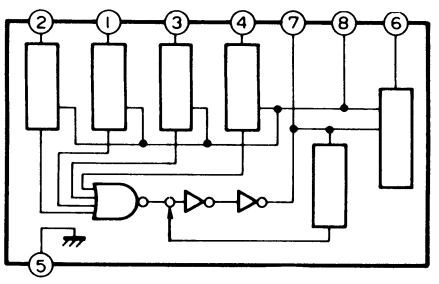
**NOTES:**

1) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals.
2) Resistors with no designation have a rated power of 1/8W and a tolerance of ±5%.
3) Capacitors with no designation have a dielectric strength of less than 50WV.
4) The only capacitor tolerance indicated are ±5% (J) and ±10% (K).
5) Ceramic capacitor symbols:
   - —||(Y— High dielectric constant system (YY)
   - —|| — High dielectric constant system (YW, YP, YZ)
   - —•|| — Semiconductor ceramic
6) Explanation of symbols
   - (M) Mylar capacitor
   - (A) Aluminum solid capacitor
   - (PP) Polypropylene film capacitor
   - (BP) Bi-polarized capacitor
   - (LL) Low-leakage capacitor
   - (T) Tantalum capacitor
   - (S) Styrol capacitor

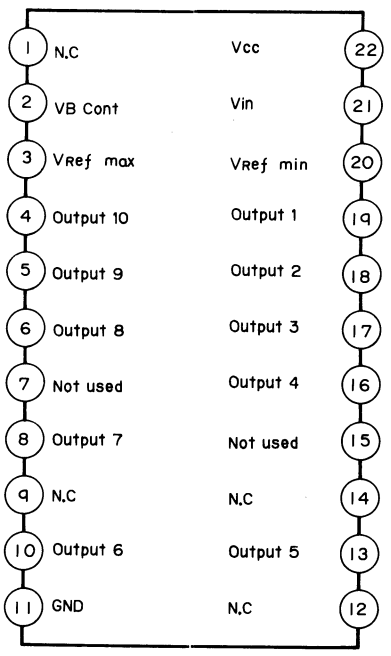
### BA658

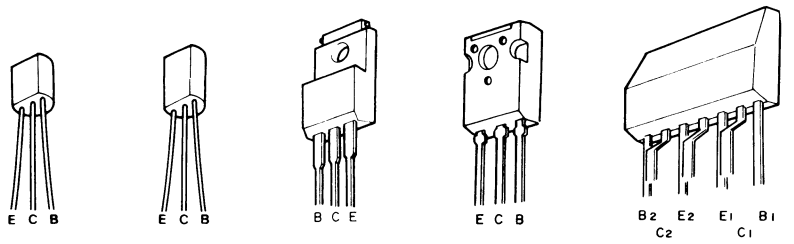



### μPC 1237H

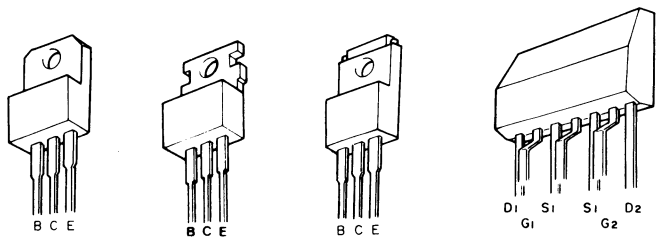


### IR2406G




**2SA1015 2SA1124 2SC945 2SC1815 2SC2001 2SC2632 2SD1302** | **2SA1020 2SC2655** | **2SB1015 2SD1406** | **2SB1067** | **2SC3381**




**2SD688 2SD718** | **2SD880** | **2SD1275** | **2SK389**

⚠ Safety component symbol
This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications.
Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

- This schematic diagram is subject to change without notice in the interests of improved performance.

# SCHEMATIC DIAGRAM (GX-120)

**A** MAIN C.B

PHONO AMP.

DSL

J1 PHONO L

J1 PHONO R

J2 CD L R

J3 AUX L R

L REC OUT R

J4

J5 PLAYER SYNC

J9 CD SYNC

TUNER J8
1 POWER ON/OFF
2 GND
3 L CH
4 TUNER
5 R CH
6 AVTIMER

J6 REC/PLAY
1 REC OUT L
2 GND
3 L CH
4 REC OUT R
5 R CH
6 SYNC
7 PHONO/CD
8 POWER ON/OFF

J7 CONT.
1 AUX REC
2 GND
3 PB
4 CD REC
5 PHONO REC
6 TAPE
7 REC
8 TUNER REC

J10 VIDEO SYNC
1 GND
2 POWER ON
3 INT VD

J12 REMOCON
1 +12V
2 GND
3 A
4 B
5 C

J13 MIX MIC

※ : Z ONLY

M5220

IC5 M4066BR

IC10 M54563 BUFFER

IC15 TC 4051BP

IC20 TC9152 SELECTOR

IC25 TC4027BP

IC30-1 IC30-2 NJM4560 BUFFER

IC31 MN6632

IC32 M5218L MIC AMP

SW1 REC OUT

SW2 MUTE

SW3 DSL

VR2 MIC VOLUME

POWER C.B
FIT 2.5A
J14,15 AC OUTLET
AC 220V 50/60Hz
J14 J15 CR1 0.01D
E,Z MODEL ONLY

240V 220V 120V
S22 VOLTAGE SELECTOR
POWER C.B
AC120/220/240V 50/60Hz
J14,15 AC OUTLET
H MODEL ONLY

J11 OUTPUT
1 POWER ON/OFF
2 GND
3 L CH
4
5 R CH
6 SPEANA OUT
7 AFB 'H'
8

DSL 12.7V 0dB MUTING
D43 1SS176
IC35-1 NJM4560
IC35-2 NJM4560
C89 0.056 C91 0.056 C90 0.056 C92 0.056
R161 12K R165 470 R159 33K R163 470K R160 33K R164 470K R166 12K
C97 0.47/50 R169 4.7K R167 56K C98 R168 4.7K R170 56K R180 470 C96 100/10
C101 47/10 R175 2.7K C103 10/16 R173 4.7K R171 3.3K C95 100/10
C105 47/10 -12.2V C93 3.3/50 C94 3.3/50
Q23 2SC945L (P) R162 1M C99 1/50 D39 1SS176 C100 0.33/50
DSL AGC
D36 RD2.2EB D37 1SS176 D38 1SS176 D35 1SS176
DSL ON 0.1V OFF 1.72V
Q24 2SC945L(P)
Q25 2SC2001 D40 RD6.2EB D41 1SS176 D42 1SS176
Q26 2SC 2001L R172 3.3K C104 10/16 C102 47/10 R176 2.7K
R174 4.7K R181 47K R182 2.2K
D45 1SS177
DSL ON 0V OFF 0.6V
R107 22K R108 22K
CON4 TP PH TU CD AUX
PIN4
B FRONT C.B
CON5 GE Lin Rin R0 L0 PIN5
MUTE AT LIGHT UP : 2V AT OFF : 0V
DSL AT ON : 1.95V AT OFF : 0V
GE AT ON : 1.97V AT OFF : 0V
SW17,D34 TAPE
SW18,D37 PHONO
SW19,D35 TUNER
SW20,D36 AUX
SW21,D38 CD
D34 D37 D35 D38 D36 R139 1K R137 1K R135 1K R138 1K R136 1K
D47 D45 D43 D46 D44 SW17 SW18 SW19 SW21 SW20 1SS176 X5
CON5 BACK POWER ON GND DISP +12V GND UP ON +5V PIN5
R207 4.7K
CON2 -12V +B1 GE DSL MUT PIN3
CON3 PIN2
SW15 VOLUME-UP SW16 VOLUME-DOWN
SW10 POWER STANDBY-ON
OFF ON
D40 GE D41 DSL D42 MUTE TLR206PRH X 3
C175 0.1/50 SW15 SW16 5V
C176 33/16 R232 390
9.5V
J11 OUTPUT
0dB
R106 100K R105 100K R109 1.5K
OFF -20dB
R110 10K D30 1SS176 R111 5.6K C55 4.7/50 C54 0.47 D29 HZ5C2
D32 D33 1SS176 X2
FLIP FLOP
IC25 TC4027BP
VSS S J K R C Q Q VDD
C53 1000P
R121 100K R122 68K
D22 1SS176 Q16 2SA1015GR
D23 HZ7C2L R123 10K R124 10K R140 3.9K R125 15K R126 6.8K D24 1SS176
C56 1/50 C58 1/50 C69 0.047 R137 470K R139 330K
5V
VR1 50K(W) BALANCE
-20.8dB
IC31 MN6632
VSS DN UP OSC
R14 470K R142 470K D27 1SS176 D28 1SS176 D25 1SS176 D26 1SS176 C59 0.022 C60 0.022
ELECTRON VR
AT UP : 4.5V
AT DOWN : 4.5V
-14V
AMP
IC32-2 C75 4.7/50
VR2 MIC VOLUME R149 47K C76 33/16 C77 33/16

5V 5.5V
ON 13.3V OFF 0V
R221 6.8K R222 4.7K C155 10/35 D67 HZ6B1 R223 8.2K D68 1SS176
0V
0.65V
ON MUTE
D65 1SS176 D69 1SS176
R225 22K R224 15K
ON 0V OFF 0.8V
OFF MUTE
0.68V
Q41 2SC1815 GR Q42 2SC1815 GR D66 HZ6B1 R226 100 POWER ON/OFF R228 47K R227 22K
D74 HZ4C2 Q43 R231 4.7K C157 3.3/50 C158 33/16 C156 100/10 R229 47K R230 22K
2SC1815GR
18.2V 14.2V
Q45 2SD880Y ISR 35-200
D70 1SS176 D71 RD6.2EB D72 D73 1B4B41
R232 27K R234 3.3K R233 33K Q44 R235 470 R239 1.2K 1/4W C159 10/16 C161 47/25 C160 47/25 C162 330/35
Q46 2SA1015GR R236 15K Q44 2SC1815GR C163 100/25 C164 330/35 R238 10K R237 15K
-0.6V -14.0V -15.2V -20.7V
Q49 2SB1067
T1 (P.T)
VOLTAGE CONTROL
POWER SW ON 13.3V OFF 1.2V
J14,15 AC OUTLET
AC120V 60Hz U ONLY
AC240V 50/60Hz K,G ONLY
POWER C.B
U,K,G MODEL ONLY

VR LEVEL IND. D80~ D89
VOLUME LEVEL
R241 270K R243 100K R242 22K 5V 12.7V
IC45 IR 2406G
D80 D81 D82 D83 D84 D88 D89 D87 D86 D85
D80 ~D89 LN350GPH

IC41 BA3812L
R219 390 R221 6.8K R223 6.8K R225 390 Q35 Q37 R213 120K R217 120K R211 1K R215 1K
C163 0.068 C165 0.0033 C167 0.01 C177 0.22/50 C169 100P C171 33/10 C172 33/10 C173 4.7/50 R229 6.8K
C143 0.047 C141 2.2/50 C145 0.047 C147 0.018 C149 0.027 C153 0.012 C151 1500P C155 470P C157 0.0039 C159 220P R227 6.8K C161 4.7/50
Q35.Q37 2SC945LP
VR15-1 VR16-1 VR17-1 VR18-1 VR19-1 VR20-1 VR21-1
VR15: 40Hz VR16: 125Hz VR17: 330Hz VR18: 1KHz VR19: 2.5KHz VR20: 6.3KHz VR21: 15KHz
100K(B) GRAPHIC EQUALIZER X7
R231 470
IC42 BA3812L
R220 390 R222 6.8K R224 6.8K R225 390 Q36 Q38 R214 20K R218 120K R212 1K R216 1K
C164 0.068 C166 0.0033 C168 0.01 C178 0.22/50 C170 100P C174 4.7/50 R230 6.8K
C144 0.047 C142 2.2/50 C146 0.018 0.68/25 C148 0.018 C150 0.027 C154 0.012 C152 1500P C156 470P C158 0.0039 C160 220P R228 6.8K C162 4.7/50
Q36.Q38 2SC945L(P)

IC45 IR2406G
21 LEVEL

| VR LEVEL | |
|---|---|
| 10 | 4.85V |
| 9 | 4.34V |
| 8 | 3.84V |
| 7 | 3.36V |
| 6 | 2.87V |
| 5 | 2.40V |
| 4 | 1.94V |
| 3 | 1.46V |
| 2 | 0.98V |
| 1 | 0.50V |
| 0 | 0V |

# B FRONT C.B

D80 ~ D89
VOLUME LEVEL

SW17, D34
TAPE

SW19, D35
TUNER

VR2
15KH

VOLUME-UP
SW15
SW16
VOLUME-DOWN
C175
R243
R242
R241
IC45
D85 D86 D87 D84 D88 D84 D83 D82 D81 D80
R231
D42
D41
D40
GL
DSL
MUT
PIN 2
PIN 3
PIN 4
PIN 5
R136
D37
SW18
D45
R37
SW17
D47
R139
D34
C154
C157
R135
D43
SW19
D35
C155
C173
R138
D46
D44
D36
SW20
SW21
D38
C164
R228
C174
C158
IC41
6.0
SW18, D37
PHONO
SW20, D36
AUX
SW21, D38
CD

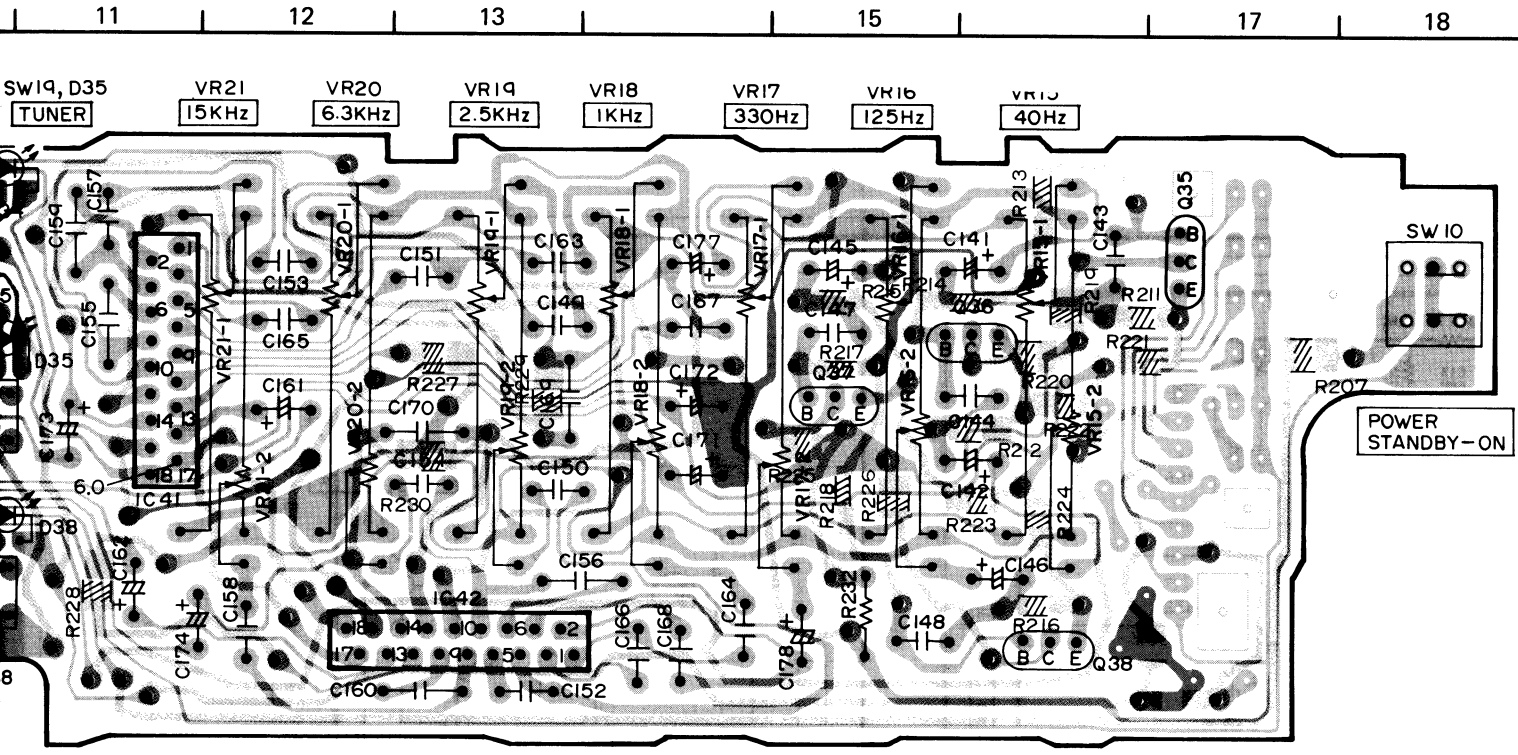
※ : Z ONLY

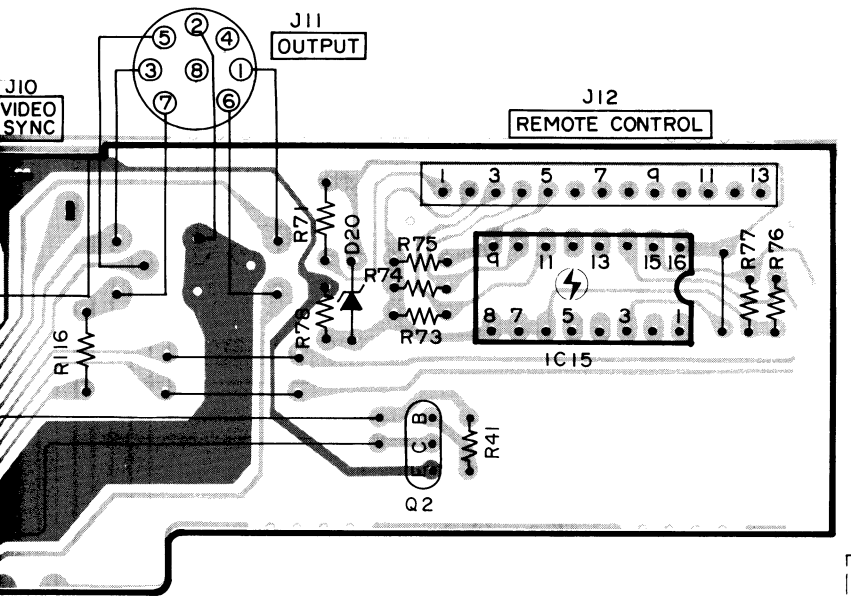
J1 PHONO
J2 CD
J3 AUX
J4 REC OUT
SIGNAL EARTH
J5 PLAYER SYNC
J6 REC/PLAY
J7 CONT
J8 TUNER
J9 CD SYNC
J10 VIDEO SYNC
Lch Rch

NO CONNECT
※C201
※C205
※C206
※C207
※C208
※C209
※C210
※C211
※C212
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25 R26 R27 R28 R29 R30 R31 R32 R35 R36 R37 R38 R39 R40 R41 R42 R43 R44 R45 R46 R47 R48 R49 R50 R51 R52 R53 R56 R57 R58 R59 R60 R61 R62 R63 R116
C1 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 C19 C20 C21 C22 C23 C24 C25 C26 C27 C28 C29 C30 C31 C32 C33 C34 C35 C36 C37 C38 C39 C40 C41 C42 C43 C46
D1 D2 D3 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 D16 D17 D18 D19 D22 D24 D25 D27 D28 D32 D51
IC1 IC5 IC10 IC20 IC30 IC31 IC32 IC35
Q1 Q3 Q5 Q6 Q7 Q8 Q9 Q10 Q24 Q26
R161 R163 R164 R166 R167 R168 R169 R170 R171 R172 R173 R174 R175 R177 R180 R183
C92 C93 C94 C96 C97 C98 C99 C101 C102 C104 C105 C106
D39 D40
R232 R233 R234 R235 R237 R239 R223
C159 C160 C161 C163
D71
Q44 Q45
R224 R225 R110
D65 D66 D70
Q41
C156
R229 R227 R228
D41 D68
R231 R222 R221
C52 C53 C57
Q15
D74 D23
R230 R122 R124
Q16
C55 D30
R123
IC25
R118 R119 R120
R121
SW1 REC OUT
SW2 TUNING
SW3 DSL
VR1 BALANCE
VR2 MIX MIC
J13 MIX MIC
CON2 CON3 CON4 CON5
R101 R102 R103 R104 R105 R106 R107 R108 R150
R137 R139 R149
C56 C58 C59 C60 C61 C62 C63 C64 C65 C66 C68 C69 C71 C72 C73 C74 C75 C77
D24 D25 D27 D28 D36 D38
R126 R135 R136 R143 R144 R145 R146 R147 R148
IC31 IC32
(BLK)
5.0 4.6 31.8 -15.2 -20.2 9.3 2.5 9.9



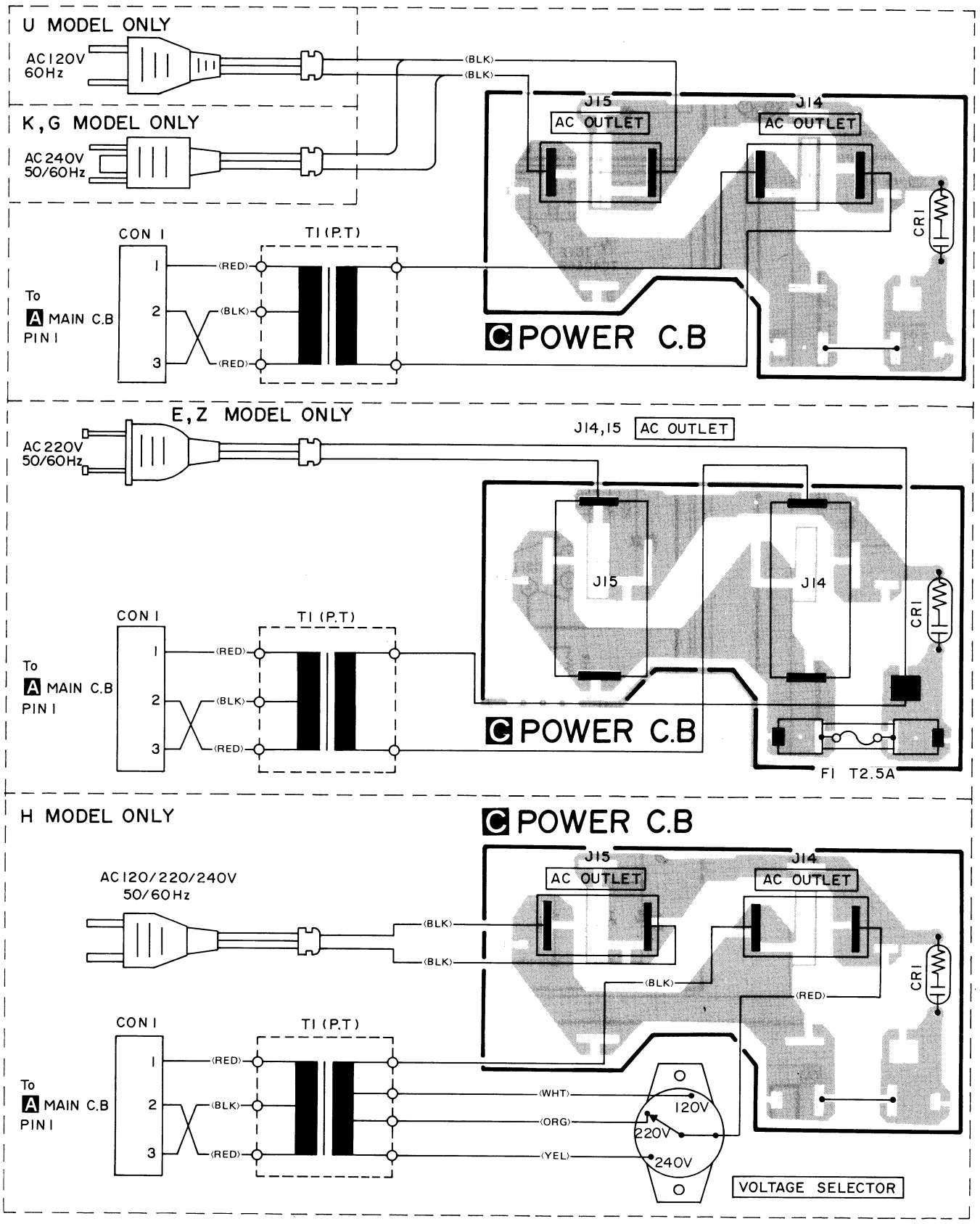
# A MAIN C.B




AIN C.B

**NOTES** (1) Earth pattern Component side pattern Others pattern
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.



# SCHEMATIC DIAGRAM (BX-120)

A MAIN C.B

C DRIVER-1 C.B

D DRIVER-2 C.B

Q15,16 DETECTION

Q21,IC21 PROTECTION CIRCUIT

IC1,3 M5218L
IC1,2 AFBS FILTER
(PRE-OUT SIGNAL)

IC3,4
AFBS FILTER
(MIC SIGNAL)

AFBS ON/OFF SELECTOR

SFR 1
DC OV ADJ.

SFR 2
DC OV ADJ.

INPUT
J1
① POWER ON/OFF
② GND
③ PRE OUT (L)
④ NC
⑤ PRE OUT (R)
⑥ SIGNAL INPUT
⑦ AFB 'H'
⑧ NC

0V/TUNER POWER SW ON
20V/TUNER POWER SW OFF

0V/PRE AMP POWER SW ON
17V/PRE/AMP. POWER SW OFF

SWITCHING LEVEL DETECTION
(U,E,K,Z MODEL ONLY)

※ H MODEL ONLY
① - ② SHORT
⑥ - ⑦ SHORT

RELAY
(POWER SUPPLY)

U,E,K,Z MODEL ONLY

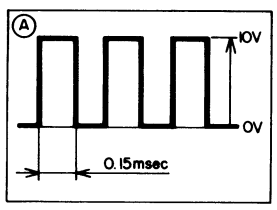
Q31 ~ Q37
SWITCHING

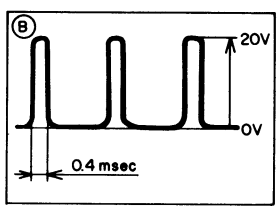
D60 ~ D63
1SS177

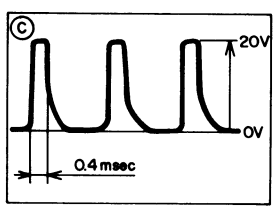
1.0V/POWER OFF
0V/POWER ON

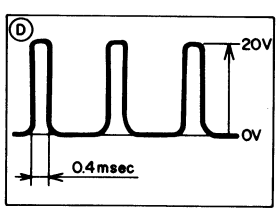
IC21 μPC1237H

B (+) power supply
B (−) power supply
Signal path
Rec path



IC25~28(SPECTRUM ANALYZE FREQ & LEVEL) AMP.
FILTER

DETECTION

PIN4 SPEANA IN

IC25~28 NJM4560

B FRONT C.B

TC4066BP PLATE DRIVER

IC35

IC35.36 ANALOG SW (DISPLAY FREQ SELECTOR)

TC4066BP

IC36

IC40 BA658

PLATE

FL

40 125 330 1K 2.5K 6.3K 15K POWER LEVEL

FILAMENT

GRID

GRID DRIVER

IC39 LB1290

COUNTER

IC37 TC4022BP

VDD CLOCK CLEAR CL(EN) 40 6.3K NC 2.5K LEVEL NC VSS IK 330 15K 125

CLOCK GENERATER

IC38 TC4001BP

D45 HZ12A1

D43 TLR206 AFBS LED

D35~42 1SS177

※R209

| | |
|---|---|
| H ONLY | 180 |
| EXCEPT H | 220 |

S11 POWER

PIN4 PIN6

+B 24V

※R231, 232

| | |
|---|---|
| H ONLY | 1K(2W) |
| EXCEPTH | 1.5K(2W) |

※F3,4

| | |
|---|---|
| U | 4A |
| E,K,Z | T3.15A |

32.5V/POWER OFF
30.2V/POWER ON

25.1V/POWER ON

27.8V/POWER ON
1.4V/POWER OFF

D53.54,55 1SS177

D56 HZ5C2

Q25 2SD1302S

Q26 2SD 1275

Q27 2SC1815Y

D65~D68 30D2FA

F FUSE SUB C.B (U,E,K,Z MODEL ONLY)

D51.52 1SR35-200

T1 P.T. PIN5 PIN3

D49 D5FB20

T.F

E FUSE C.B

| | | FI | AC |
|---|---|---|---|
| U | MODEL | 5A | 120V 60Hz |
| E,Z | MODEL | 2AT | 220V 50/60Hz |
| K | MODEL | 2AT | 240V 50/60Hz |

H MODEL ONLY

240V 220V 120V F1 7A F2 3.15A S12

G VOLTAGE SELECTOR C.B (H ONLY)

AC120/220/240V 50/60Hz

PHONES J2

To CHASSIS

S5-1 S5-2 OFF ON S5

SPEAKERS A

J3 SPEAKERS A (L)

J4 SPEAKERS A (R)

1. +12V 2. GND 3. +SP 4. MIC INPUT 5. -SP

S6 SPEAKERS B

S6-1 S6-2 OFF ON

J5 SPEAKERS B

Lch Rch

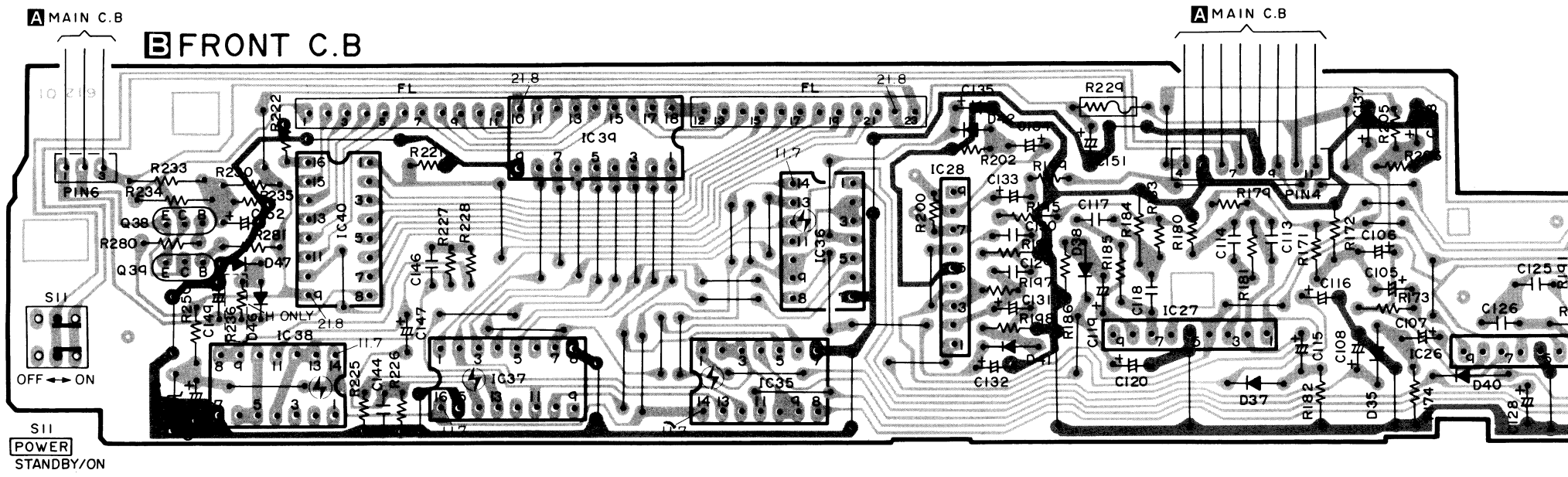
AC 1.2

FILAMENT 1.1

4.8

Safety component symbol

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.



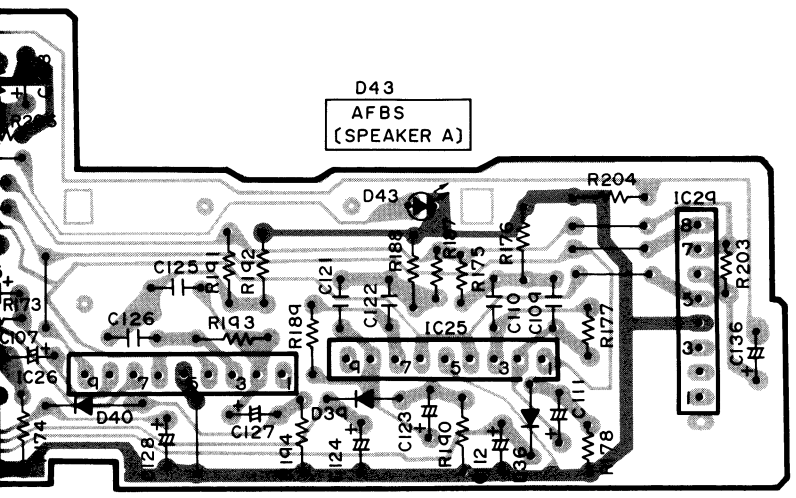

1. DC 0V ADJUSTMENT
Settings: • Input signal: No signal
• Test point: Speaker out B
• Adjustment locations:
SFR1 (Lch)
SFR2 (Rch)
Method: Adjust so that the voltage the test point is 0 ± 10mV.

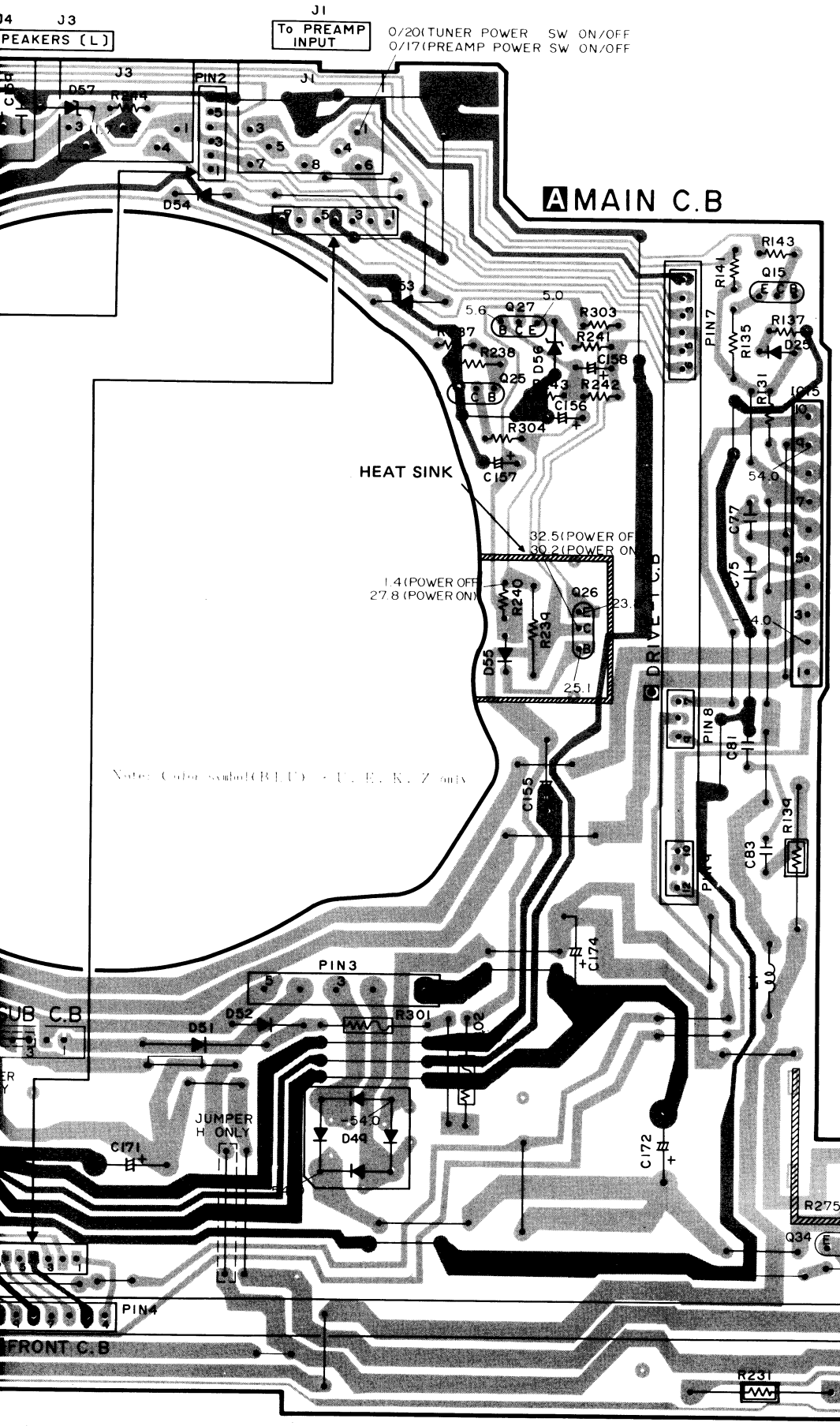
**NOTES** (1) ■ Earth pattern ▒ Others pattern

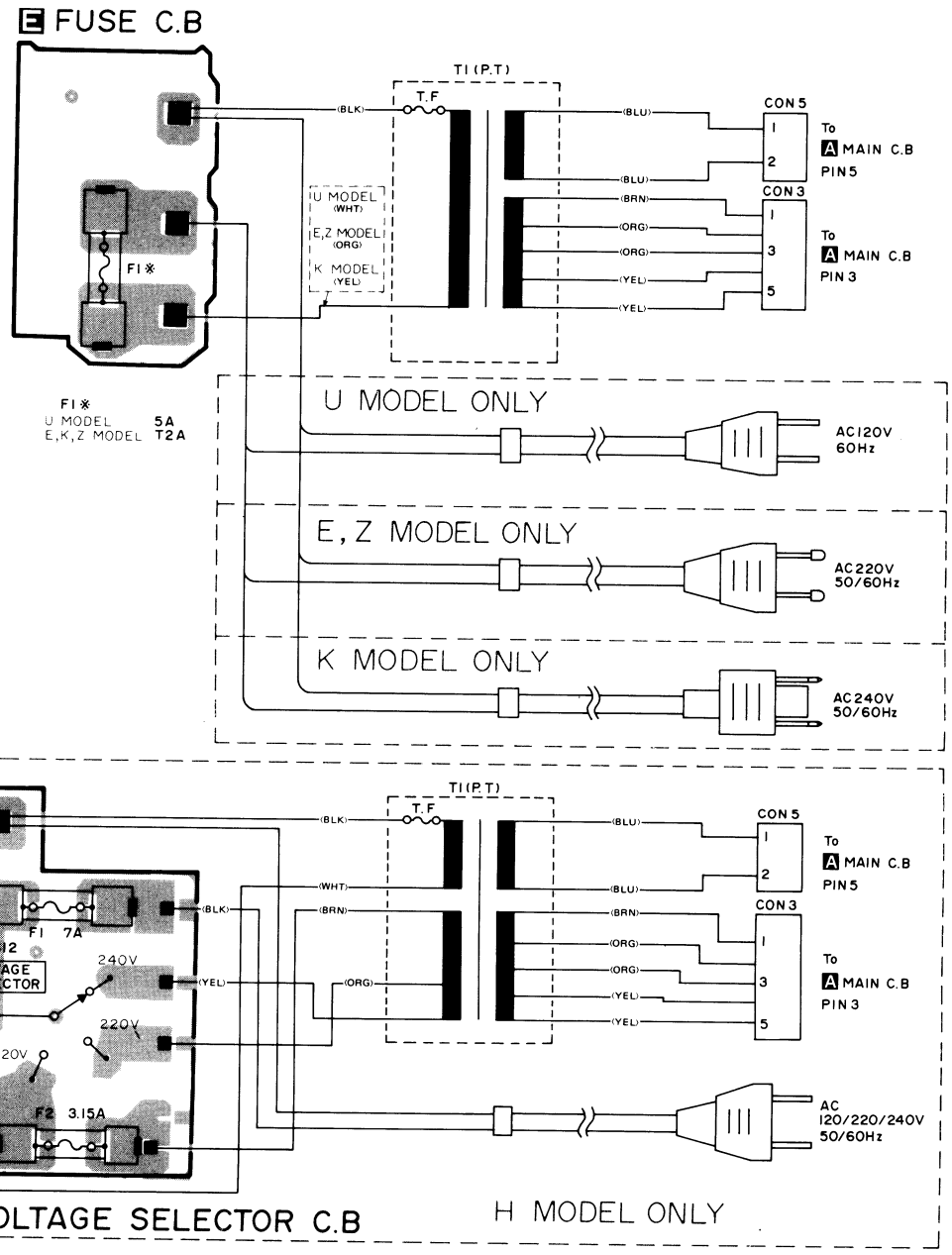
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals. An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.

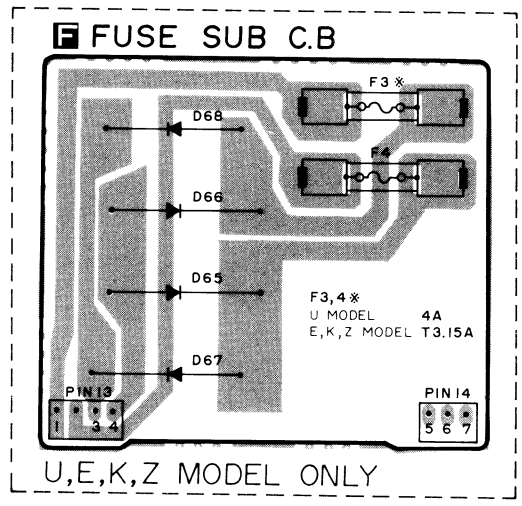
The ICs on the electrical parts which are indicated by

11 12 13 14 15 16 17 18 19 20 21



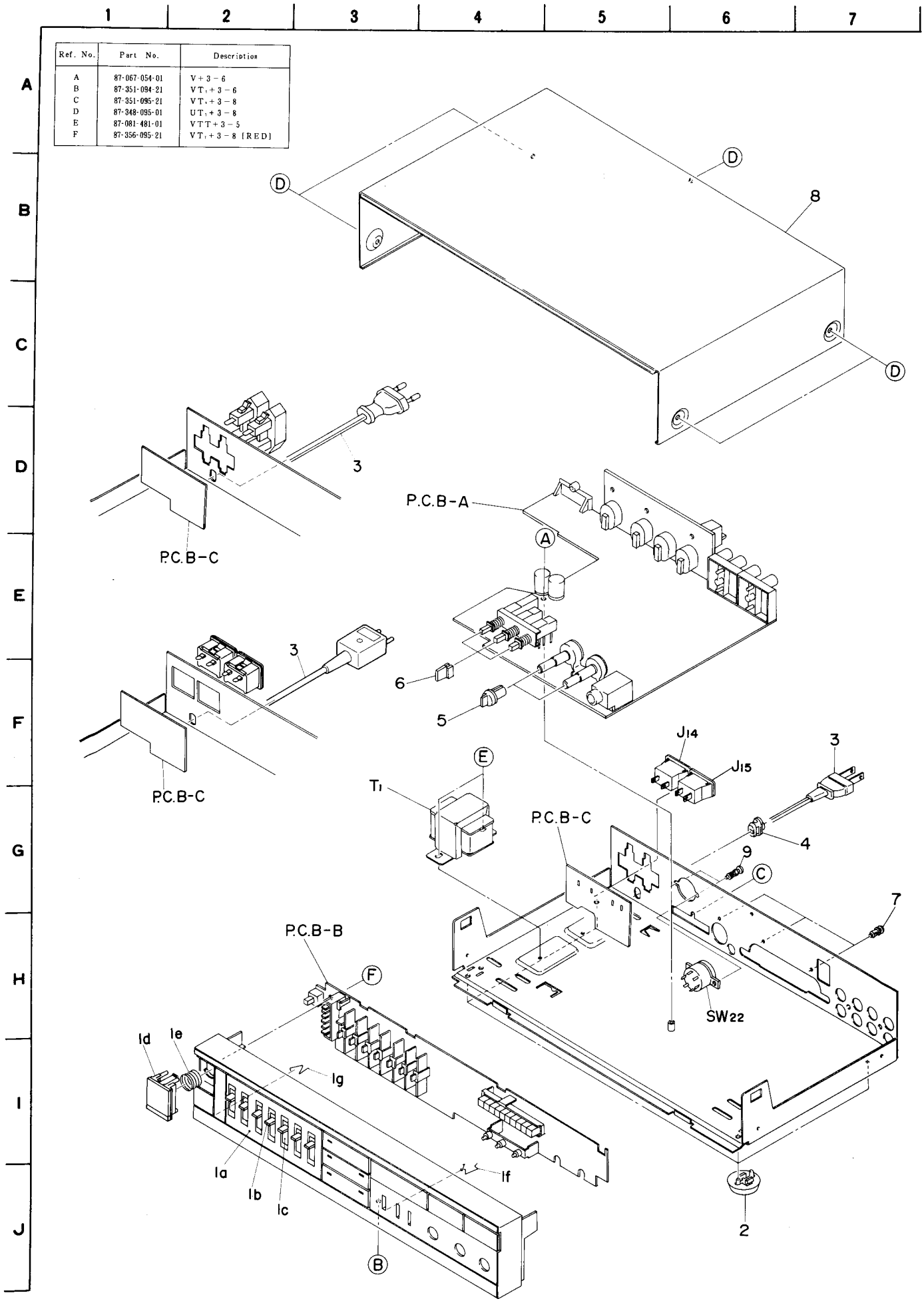




which are indicated by an C-MOS IC symbol mark ( ⚡ ).

☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ **MEMO** ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

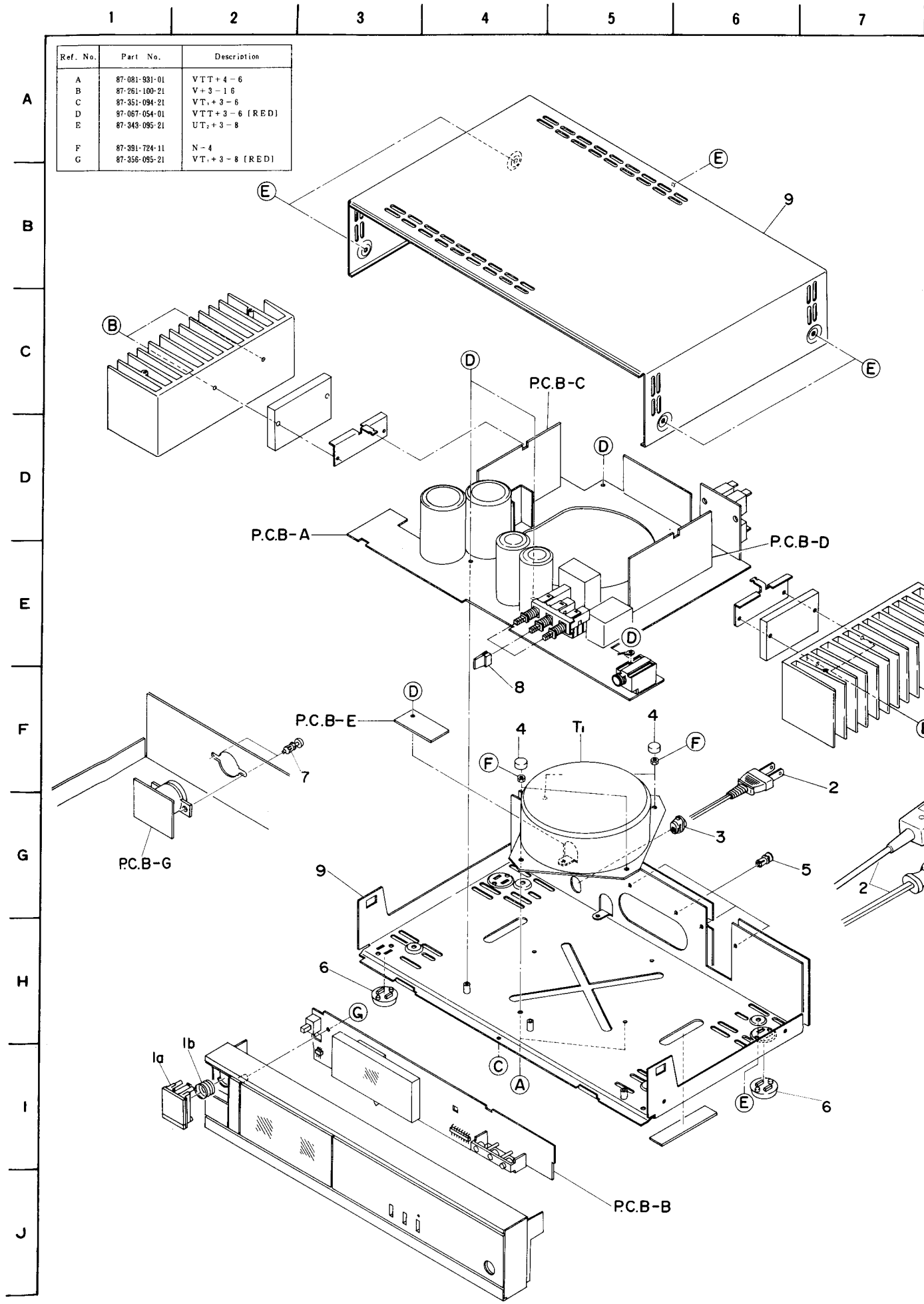
# EXPLODED VIEW GX-120

| Ref. No. | Part No. | Description |
|---|---|---|
| A | 87-067-054-01 | V + 3 − 6 |
| B | 87-351-094-21 | VT₁ + 3 − 6 |
| C | 87-351-095-21 | VT₁ + 3 − 8 |
| D | 87-348-095-01 | UT₁ + 3 − 8 |
| E | 87-081-481-01 | VTT + 3 − 5 |
| F | 87-356-095-21 | VT₁ + 3 − 8 [RED] |



# EXPLODED VIEW BX-120

| Ref. No. | Part No. | Description |
|---|---|---|
| A | 87-081-931-01 | VTT+4-6 |
| B | 87-261-100-21 | V+3-16 |
| C | 87-351-094-21 | VT1+3-6 |
| D | 87-067-054-01 | VTT+3-6 [RED] |
| E | 87-343-095-21 | UT2+3-8 |
| F | 87-391-724-11 | N-4 |
| G | 87-356-095-21 | VT1+3-8 [RED] |



## MECHANICAL PARTS LIST

- ※mark in this part list shows exclusive part
- ★mark means less required items and availabilities may be limited.

| Part No. changed to | Ref. No. | Part No. | Description | Common Model | Q'ty |
|---|---|---|---|---|---|
| | 1 | ★81-739-028 | FRONT CABINET UB Ass'y | ※ | 1 |
| | 1a | ★81-740-007 | PLATE G | | 1 |
| | 1b | ★81-740-020 | KNOB G | | 7 |
| | 1c | ★81-740-021 | SHEET G | | 7 |
| | 1d | ★81-740-050 | PUSH-KEY POWER B Ass'y | | 1 |
| | 1e | ★81-740-208 | C-SPRING, POWER | | 1 |
| | 1f | ★81-740-211 | T-SPRING, A | | 1 |
| | 1g | ★81-740-212 | T-SPRING, B | | 1 |
| | 2 | ★87-055-057 | FOOT B | | 4 |
| | 3 | ★87-034-992 | AC POWER CORD (H only) | | 1 |
| | | ★87-034-578 | AC POWER CORD (U only) | | 1 |
| | | ★82-788-674 | AC POWER CORD (E, Z only) | | 1 |
| | | ★87-034-708 | AC POWER CORD (K only) | | 1 |
| | 4 | ★87-085-184 | CORD BUSHING (H, U only) | | 1 |
| | | ★87-085-185 | CORD BUSHING (E, K, Z only) | | 1 |
| | 5 | ★82-192-040 | KNOB, B | FX-30 | 2 |
| | 6 | ★82-798-023 | PUSH-BUTTON, MUT | MX-90 | 3 |
| | 7 | ★87-085-102 | NYLON RIVET 3.5-5.5 | | 3 |
| | 8 | ★81-735-056 | STEEL CABINET TB | | 1 |
| | 9 | ★87-085-090 | NYLON RIVET 3-6.5 (H only) | | 2 |

## MECHANICAL PARTS LIST

●※ mark in this part list stows exclusive part.
●★-mark means less required items and availabilities may be limited.

| Part No. changed to | Ref. No. | Part No. | Description | Common Model | Q'ty | |
|---|---|---|---|---|---|---|
| | 1 | ★81-738-028 | FRONT CABINET UB Ass'y | ※ | 1 | |
| | 1a | ★81-740-050 | PUSH-KEY POWER B Ass'y | | 1 | |
| | 1b | ★81-740-208 | C-SPRING, POWER | | 1 | |
| | 2 | ★87-034-992 | AC POWER CORD (H only) | | 1 | |
| | | ★87-034-578 | AC POWER CORD (U only) | | 1 | |
| | | ★82-788-674 | AC POWER CORD (E, Z only) | | 1 | |
| | | ★87-034-708 | AC POWER CORD (K only) | | 1 | |
| | 3 | ★87-085-184 | CORD BUSHING (H, U only) | | 1 | |
| | | ★87-085-185 | CORD BUSHING (E, K, Z only) | | 1 | |
| | 4 | ★82-781-206 | PLATE NUT | SA-P80 | 2 | |
| | 5 | ★87-085-102 | NYLON RIVET 3.5-5.5 | | 4 | |
| | 6 | ★87-055-057 | FOOT B | | 4 | |
| | 7 | ★87-085-090 | NYLON RIVET 3-6.5 (H only) | | 2 | |
| | 8 | ★82-798-023 | PUSH-BUTTON, MUT | MX-90 | 3 | |
| | 9 | ★81-738-035 | STEEL CABINET PB | ※ | 1 | |

# ■ACCESSORIES/PACKAGE LIST

## GX-120

| Part No. changed to | Ref. No. | Part No. | Description | Common Model | Q'ty | |
|---|---|---|---|---|---|---|
| | 1 | 81-739-904 | INSTRUCTION BOOKLET | ※ | 1 | |

## BX-120

| Part No. changed to | Ref. No. | Part No. | Description | Common Model | Q'ty | |
|---|---|---|---|---|---|---|
| | 1 | ★81-738-904 | INSTRUCTION BOOKLET | ※ | 1 | |

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